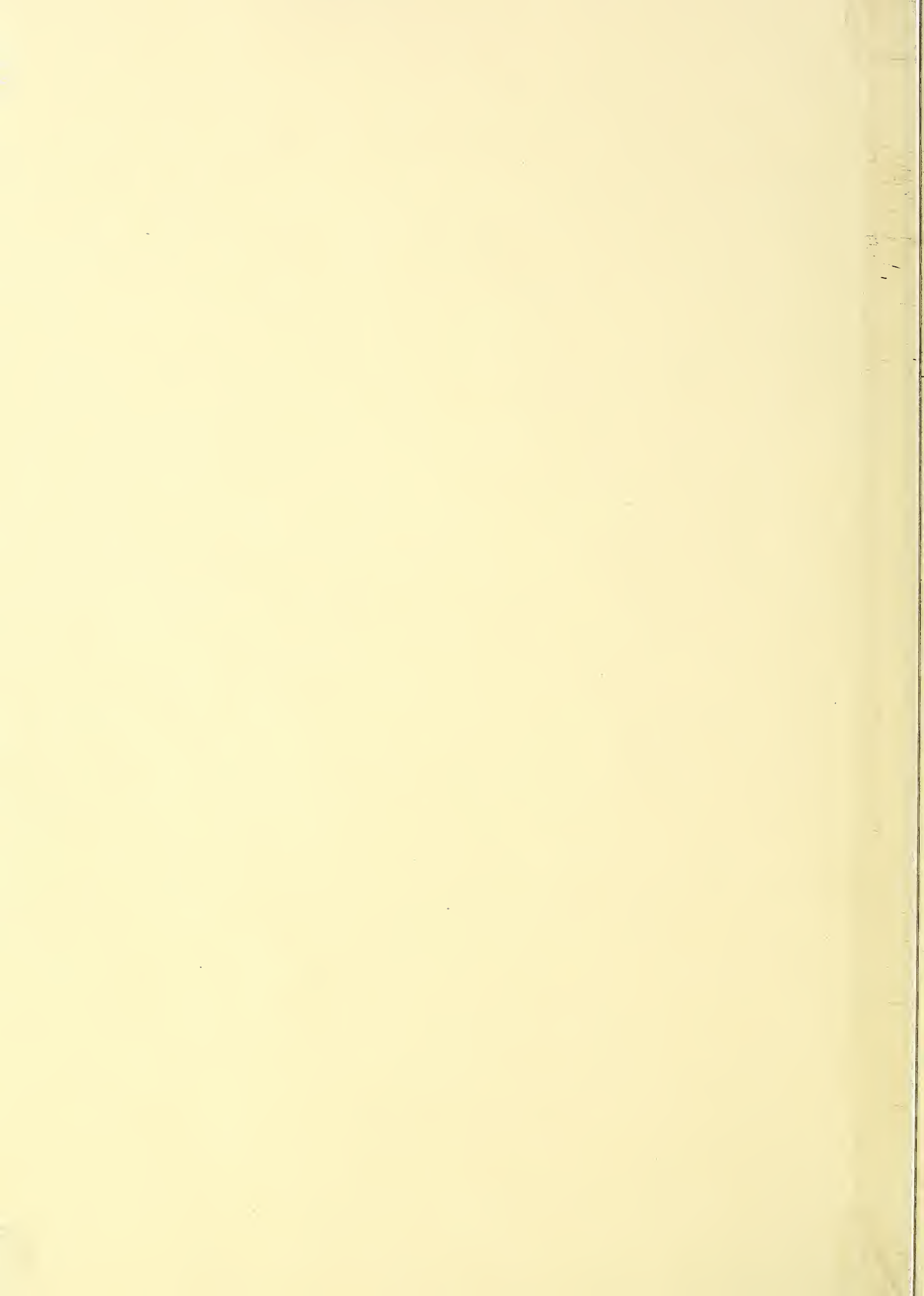


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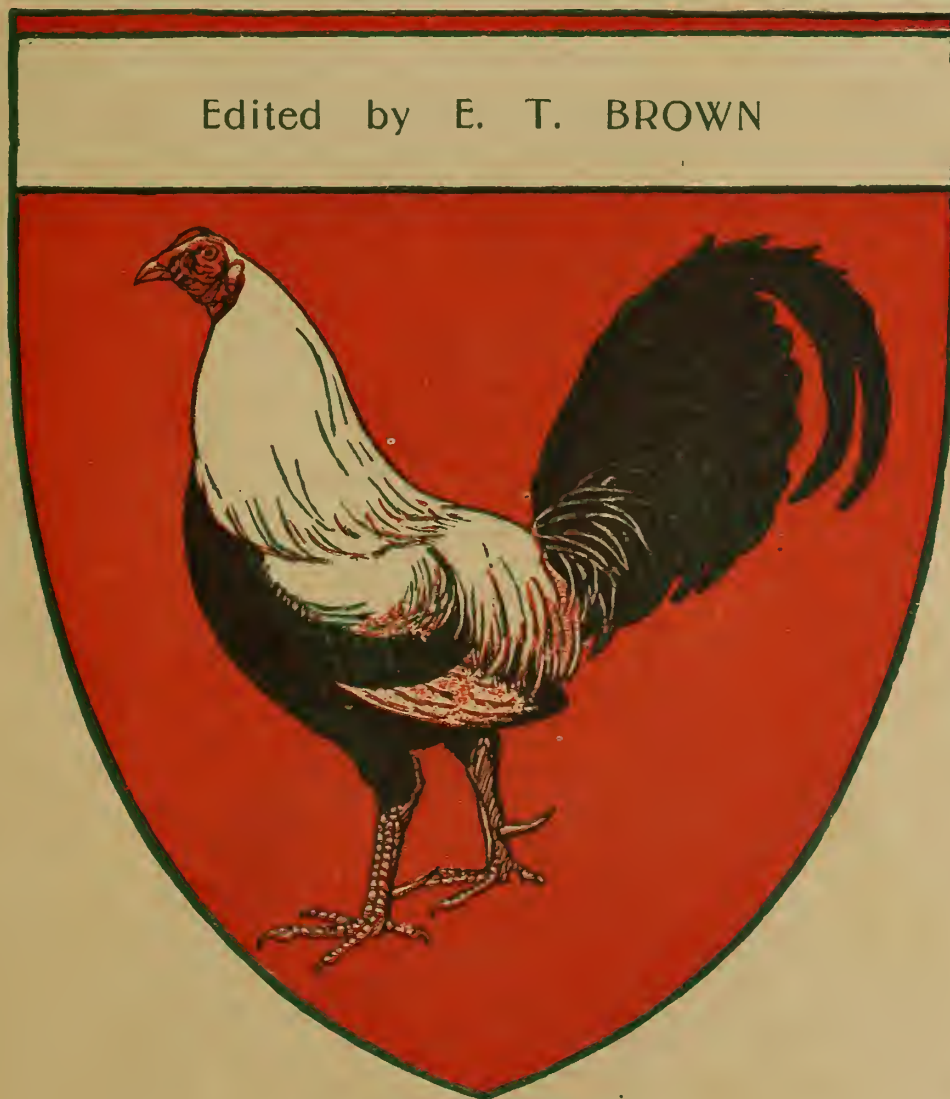
# THE ILLUSTRATED POULTRY RECORD

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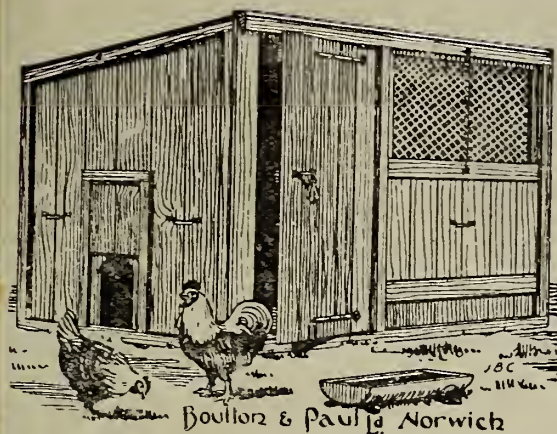
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## CONTENTS.

## DIARY OF THE MONTH :

	PAGE
World's Poultry Congress, 1916—A Great Event ... ..	339
American Competition—Diseased Houses—Tuberculosis and Laying ... ..	340
Five Million Eggs—Salaries of Poultry Instructors—Wasted Railway Sides—Transit of Live Poultry ... ..	341
Hotel Poultry Trade—Hospital Egg Week ... ..	342

## LEADING ARTICLES :

Non-Proven ... ..	By Edward Brown, F.L.S.	343
Poultry Farming in Canada ... ..	By Elizabeth Keith Morris	346
The Food-Stuff Traveller ... ..	By A. T. Johnson	348
Constitutional Vigour in Poultry ... ..	By "Statistician"	350

A REMARKABLE POULTRY CENTRE ... ..		356
VARIATIONS IN IMPORTS OF EGGS AND POULTRY ... ..		357
THE AMATEUR FANCIER ... ..		359
SOME MAY HINTS ... ..		360
THE POULTRY YARD IN MAY AND JUNE ... ..	By F. W. Parton	361
THE SMALLHOLDER'S FIRST YEAR—V. Permanent and Portable Houses and Runs ... ..		362
SPECIALIST CLUB YEAR BOOKS RECEIVED ... ..		363
THE POPULARITY OF BREEDS ... ..	By A FANCIER	364
FEEDING POULTRY ... ..	By W. M. E.	366
TUBERCULOSIS IN FARM POULTRY ... ..	By W. W. DIMOCK	369
FRENCH FATTENING METHODS ... ..		373
CHICKEN FEEDING ... ..		374
MODERN SCIENCE AND POULTRY PROBLEMS ... ..	By Oscar Smart	375
CHICKEN FLATS ... ..		376
POULTRY COOKERY—Some Egg Dishes ... ..		378
FURTHER NOTES ON SHOWING RHODE ISLAND REDS ... ..		380
THE UTILITY POULTRY CLUB'S TWELVE MONTHS' LAYING COMPETITION, 1912-1913	By F. W. Rhodes	381
A WORLD'S POULTRY CONGRESS ... ..		385
POULTRY FARMING AND SPORT IN SCOTLAND ... ..		385
TWO RAILWAY ITEMS ... ..		386
POULTRY CLUB ... ..		388
CORRESPONDENCE ... ..		388—x.
TRADE ITEM ... ..		x.



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## INDEX TO ILLUSTRATIONS.

	PAGE		PAGE
A CANADIAN BLACK HAMBURG COCK	Frontispiece	A FLOCK OF LAYING HENS ON AN AMERICAN	
A CORNER ON LORD ROTHCHILD'S POULTRY		FARM ... ..	357
FARM AT TRING ... ..	342	A CORNER VIEW ON A BELGIUM FANCIER'S	
A TYPICAL LIGHT BRAHMA ... ..	345	YARD ... ..	359
ON A CANADIAN POULTRY FARM ... ..	346	WELL ARRANGED BREEDING PENS ... ..	363
A POPULAR TYPE OF HOUSE IN CANADA ... ..	347	A TRIO OF BUFF ORPINGTONS ... ..	365
THE AUTHORESS IN HER BUGGY ... ..	347	WAITING TO BE FED ... ..	367
EARLY-HATCHED WHITE WYANDOTTES ... ..	349	A HOUDAN PULLET ... ..	369
FIG. 166—Showing amount of food required		AT THE ANNUAL SHOW OF THE POLTAWA	
to produce 1 dozen eggs ... ..	351	ASSOCIATION, RUSSIA ... ..	371
FIG. 167—Showing percentage of mortality	352	OUTSIDE CAGES ON A SUSSEX FATTENING	
FIG. 168—Showing amount of food required		ESTABLISHMENT ... ..	373
to produce 1 dozen eggs. All experi-		DANISH WHITE LEGHORNS ... ..	376
ments ... ..	352	A RED SUSSEX HEN ... ..	379
A PAIR OF SALMON FAVEROLLES ... ..	353	TRAP-NESTING ON THE POULTRY FARM AT	
FIG. 169—Showing amount of food required		MACDONALD COLLEGE ... ..	383
to produce 1 dozen eggs. All experi-		AT THE POLTAWA POULTRY SHOW, RUSSIA	385
ments ... ..	354	ANOTHER VIEW AT DITTO ... ..	286
FIG. 170—The percentage of mortality. All			
experiments ... ..	355		

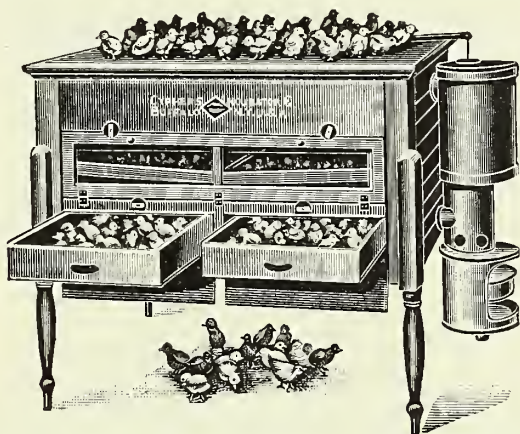
## INDEX TO ADVERTISERS.

	PAGE		PAGE
BABCOCK, MISS R. B. ... ..	xii.	JEWERS, F. ... ..	ii.
BAILEY & SON, JOHN ... ..	viii.	LANG LTD, R. T. ... ..	iii.—vi.—xii.—xiii.—xv.
BOULTON & PAUL ... ..	iii.	MILLER, ROBERT ... ..	vi.
BROWN & LILLY, LTD. ... ..	xiii.	ONE AND ALL SEEDS ... ..	xii.
CLEMENT TALBOT, LTD. ... ..	iv.	PRIDEAUX, MRS. L. C. ... ..	viii.
COOK, LTD., WILLIAM H. ... ..	iv.—xi.	ROYAL SHOW, SHREWSBURY ... ..	xiii.
COWAP, M. DALTON ... ..	iii.	SPRATTS PATENTS ... ..	xvi.
CYPHERS INCUBATOR CO. ... ..	viii.	STANLEY UNDERWOOD CO. ... ..	xii.
DANYSZ VIRUS, LTD. ... ..	xiii.	STEPHENS, HORACE W. ... ..	xiii.
DE GRAFF POULTRY FARM ... ..	viii.	TAMLIN, W. ... ..	ix.
FARM POULTRY PUBLISHING CO. ... ..	xii.	TOOPE & CO., R. ... ..	viii.
GAMAGE, A. W., LTD. ... ..	xi.	UNITED POULTRY PUBLISHING CO. ... ..	xiii.
HATCH, C. T. ... ..	ii.	VICTORIA POULTRY FARM, THE ... ..	xiii.
HUNT, W. HOLMES ... ..	vi.	WHITE, TOMKINS & COURAGE ... ..	iii.
I.M.G. Co. ... ..	vi.		



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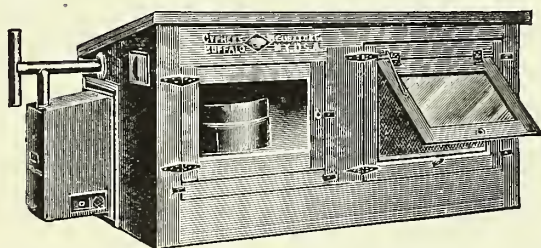
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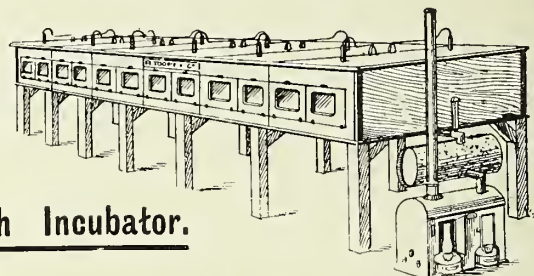
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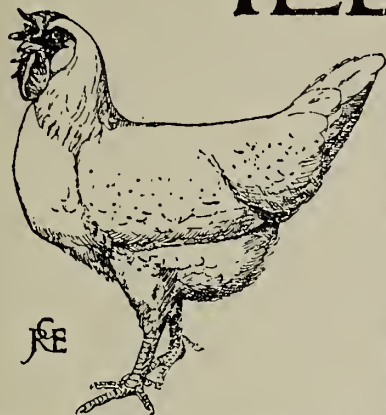
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# THE ILLUSTRATED POULTRY RECORD



Vol. VI.—No. 8.

May 1, 1914.

Monthly, Price Sixpence.

## DIARY OF THE MONTH.

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*The Editor would like to hear from readers on any Poultry Topics, and all Queries addressed to the paper will be answered by experts in the several departments. The desire is to help those who are in difficulty regarding the management of their poultry, and accordingly no charge for answering such queries is made.*

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**The utmost care is exercised to exclude all advertisements of a doubtful character. If any reader has substantial grounds for complaint against an advertiser he is requested to communicate at once with the Editor.**

### World's Poultry Congress, 1916.

We have great pleasure in announcing that the First World's Poultry Congress is to be held at The Hague, Holland, by invitation of the Netherlands Government in 1916, and in calling special attention to the brief but satisfactory notice published in the present issue. It will be remembered that one of the resolutions passed at the International Meetings which were held in London, July, 1912, was to the effect that a World's Poultry Congress should be held every three years, the first to be in 1915. Since that time the President, Mr. Edward Brown, F.L.S., and the Hon. Secretary, Dr. Raymond Pearl, of the International Association, have been engaged in negotiations for the first of these. It is always the primary step that counts. In this case success, upon which we warmly congratulate those gentlemen named, has attended their efforts. His excellency Mynbeer Treub, Minister of Agriculture, has given his warm support to the proposal, together with the permanent officials of his department. It is owing to their influence an invitation was given through the International Association of Poultry Instructors and Investigators. It is hardly necessary to say that has been heartily and unanimously accepted. At the request of the Netherlands Government the date is fixed for a year later than originally intended. That, however, is an advantage. The organisation of such a congress is no light undertaking, and all the intervening time will be required to make it representative of the entire civilised world, and to ensure its success.

### A Great Event.

That it will be heartily responded to in every country we have no doubt whatever. No better choice could possibly have been made than The Hague, which is the centre of the world for all



that concerns the arts of Peace. Apart from efforts that are being put forth for development of the poultry industry in Holland with such marked success, there are many other reasons which are obvious. We call special attention to the announcement that every phase and branch of the industry, from production to trading, will have its allotted place in the Congress, so that a complete consideration of the many problems involved will be given. That should ensure its success. What is now required is that steps should be taken to obtain an adequate representation from the United Kingdom, which is favoured in that The Hague can be so expeditiously reached. Doubtless in due course arrangements will be made in this direction. All should combine to make the first World's Poultry Congress worthy of the place and the subject, as it should mark a new era in the history of the Poultry Industry.

#### American Competition.

Reference has previously been made in the POULTRY RECORD to what may have an important influence upon European supplies of eggs and poultry, namely, that as a result of abrogation of the import duties on these products in the United States of America, that country may become a very large buyer on this side of the Atlantic. Should that be so the effect could not fail to be great. The population of the United States is nearly as large as that of Great Britain and Germany combined, and could absorb a considerable quantity of present-day imports into these two countries. Already a beginning has been made. Eggs, principally Russian, have found their way from Hamburg to New York. In December, as previously reported, several thousand turkeys were bought on the London market, and recently 25,000 English chickens were shipped to the same destination. This seems a reversal of the order of things. We have heretofore looked to America for food supplies. As a further indication the imports of poultry from the States to the United Kingdom, fell in the first quarter of the current year from 45,493 cwts. in the corresponding period of 1913 to 18,135 cwts. What the future will reveal remains to be seen. Probably with eggs the most serious time will be from September to January next. Meanwhile producers at home have greater opportunities presenting themselves than ever before, while consumers have to face a possible serious inflation of prices.

#### Diseased Houses.

Sir Thomas Oliver, Medical Professor at Durham University, in an address recently called attention to the fact that from time to time evidence has been forthcoming that in various

communities inhabitants of certain single or groups of houses fall victims to cancer to a much greater extent than those who live in neighbouring dwellings. Some very remarkable cases were cited in proof from experience in this and other countries, the most striking of which was the case of three women who, in succession, occupied a particular bedroom, all of whom died of malignant cancer. The second victim had lived twenty years in the house before she moved to the infected bedroom, and the third eight years. No further case occurred after the bedroom had been thoroughly disinfected. This raises a question of very great importance to poultry-keepers, not in relation to their own dwellings, or to cancer in any form, but their poultry houses. Our observations go to confirm the view that in many instances the source of infection is in the building itself. One instance may be cited, namely, that of successive outbreaks of roup, which always began among the flocks in one house, spreading thence to others upon the place. Many reasons were given for such being the case, such as want of sufficient ventilation, tainted ground, and so on, all of which may have contributed. That the house itself was infected does not appear to have been considered. The question is one worthy the attention of poultry pathologists.

#### Tuberculosis and Laying.

A writer in the *Feathered World* suggests that there is a direct relationship between increased fecundity and advance in tuberculosis, claiming that in flocks which have been "bred to lay" the number which fall victims to this fell disease, to which many names are given, are much greater than where the average production is lower. Upon what evidence the statement is based we do not know. It would be valuable if records were available of flocks which have been rigidly trap-nested for six or seven years, as to how far experience bears out this suggestion. That probably it is true in many cases may be accepted. At the same time the causes are not due to increased laying but to other influences. Excessive laying may by weakening the constitution make fowls more amenable to tubercular attacks, as does in fact ultra-refinement, yet the direct cause has to be looked for in other directions. When, as is too often the case, such birds are kept under restricted conditions, intensively or semi-intensively, where the quarters are crowded and the risks of tainted soil considerable, it is to the latter we must attribute tubercular disease, aided, of course, by reduction of the powers of physical resistance. It is here that the great danger of intensification lies. Unless, therefore,



special care is taken to maintain the virility of the stock the ultimate result cannot fail to be disastrous. Medical evidence with regard to human beings shows that foul atmosphere and want of hygienic conditions are always followed by a greater extent of consumption. The same is doubtless true of poultry.

#### Five Million Eggs.

The question has several times been asked, "What is wrong with co-operation?" The answer is, "Nothing!" We have previously dealt at length with the remarkable work done by the Framlingham Agricultural Co-operative Society, whose Annual Statement records that last year 5,000,000 eggs were sold for upwards of £23,000. That is an indication of what can be accomplished where the conditions are favourable, farmers and others take up poultry-keeping on proper lines, the operations are on an adequate scale, and the business management is satisfactory. The first of these is an essential factor. Without that all else will be in vain. Probably the main reason why greater progress has not been made is that the areas have been in many cases too restricted, and that the supplies were inadequate for maintenance of a regular trade. There is, however, a further explanation, namely, that in a large number of counties local demands far exceed supply; as a consequence there is, except for a short period of the year, always a profitable outlet at hand with considerable competition among buyers, who may offer more in the scarcer seasons than can many co-operative societies. Except in purely producing districts, the number of which is not large, the future of co-operation depends entirely upon a vastly increased volume of production. Framlingham is a shining example of what can be done in purely farm areas.

#### Salaries of Poultry Instructors.

The time has come when plain speaking should be employed to County Education Committees with respect to the salaries of Poultry Instructors. From time to time this question has been referred to in our columns, apparently without effect. It is all a question of cheapness. This is one reason why in some parts of the country women have been engaged, not with any idea that they were better for the work than men, but could be secured at lower rates. Why that should be so it is not our purpose to discuss. The fact is as stated. Many Education Committees appear to think that poultry-keeping can be taught by anyone, and have no idea that to be effective it entails long study and hard laborious work. As a consequence they offer salaries that would be spurned by teachers in other subjects. A striking example of the spirit manifested is seen in the case of Wiltshire,

that great county with its 722,000 acres of cultivated land, with vast possibilities for further development of the poultry industry, in which considerable progress has been made, and wherein the retiring instructor, Mr. A. D. Allen, has done excellent work. Here is a case in which it might have been anticipated that an effort would be made to secure the best available man possible by offering an adequate salary, equal to the position. Yet advertisements are issued offering a minimum of £120 per annum, which is contemptible for the work required to be done, and upon which no one could possibly live in accordance with the standard he has a right to expect. Not until instructors refuse to accept such salaries will such an intolerable state of affairs be put an end to. £200 to £250 per annum would not be a penny too much for a post of that nature.

#### Wasted Railway Sides.

Many railway employees are keen poultry keepers. Few, however, have permission to use the waste sides of the railway lines for their fowls, and have to find plots elsewhere. We note that Mr. J. A. Little of the Grootfontein College, Cape Colony, has made the suggestion that a Poultry Club should be formed by employees of the South African Railways, with a view of inducing these men to increase and improve the poultry kept by them. With the railway at hand they could increase the scope of their operations, and easily find outlets for their produce. We have often wondered why more use is not made of the railway banks in this country, of which there are thousands of miles that might be available, and can only come to the conclusion that the Railway companies object to allow their servants to enclose the land. Perhaps they think passengers might not like to see hens all the way. Even if that were so on the trunk routes such would not apply elsewhere. Under these conditions if a hen were allowed per running yard, millions of fowls might thus be kept. We can well understand that on embankments scratching would be undesirable. Where the sides are flat the plan is worth a trial. That the hens would not be disturbed by trains passing is confirmed by such experience as we have.

#### Transit of Live Poultry.

A large amount of disease among poultry generally by conveyance in infected hampers and baskets appears to be evident. Mr. J. W. Hurst, writing in *Feathered Life*, calls attention to this question, stating that a large amount of roup is caused in this way, involving a considerable amount of loss to fatteners and others. In that connection we are still under the influence of the time when fowls were regarded as of such small



value that it was not worth while imposing restrictions respecting them, either on farms or markets, or in transit between the two. Anyone may infect a whole district with diseased birds, and there is no one to say him nay, so long as they are alive. That has to be put an end to, and the sooner the better, even though poultry keepers may not like the restrictions that must be adopted. That the basket system is difficult to deal with may be admitted. We believe that not one shipper in a hundred ever thinks of disinfecting them, and they are thus liable to become veritable hot-beds of infection, helped thereto by their structure. Nothing could well be devised affording a greater harbourage for microbes than hampers. The time must come when these will give place to railway trucks for poultry, built in three and four decks, as used upon the Continent of Europe and in America, and throw upon the companies the onus of disinfection, with rigid veterinary examination at the places of disembarkation.

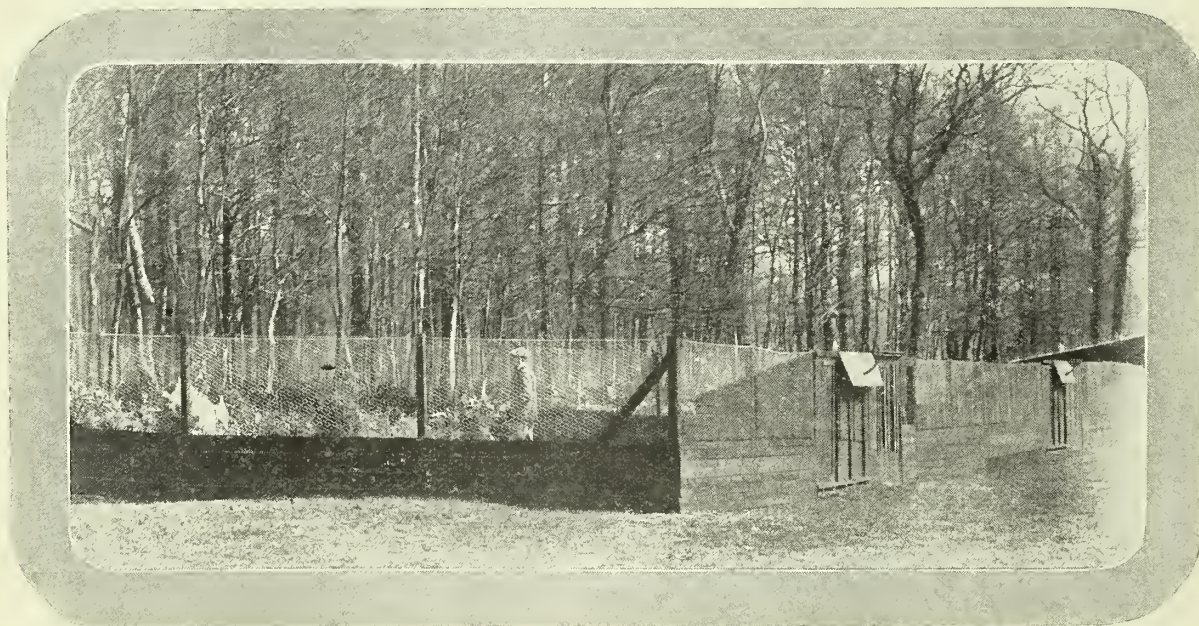
#### Hotel Poultry Trade.

Considerable interest has been aroused by reports of a meeting held recently at the Savoy Hotel, London, to consider the question of producing chickens to meet the huge demand from some of the great London hotels, one of which is stated to pay £20,000 per annum to French producers for fowls, said to be those known as Rennes, that is, the Cuckoo de Rennes chickens. Everyone interested in the poultry industry will wish success to any and every movement of this kind. Whatever will afford a better and more reliable market to producers is heartily to be welcomed. Various schemes were suggested for carrying out the project, but as these are yet

under consideration, it is too early even to express an opinion on them. Much, apart from the supreme question of business management, will depend upon the methods adopted. So far as we have read, for by some strange circumstance, representatives of the poultry and agricultural press do not appear to have been invited, the main factor will be whether the supply of birds are to be drawn from general farmers and cottagers, who each rear under more or less natural conditions a number of chickens, or dependance is to be placed upon intensive rearers. The former is known to be successful; the latter has yet to be demonstrated. However, we must "wait and see," meanwhile saying how sincerely we sympathise with the object in view.

#### Hospital Egg Week.

For the past five years we have asked our readers to bear in mind the Hospital Egg Week scheme arranged by our contemporary "The Poultry World," and once again we desire to bring this excellent endeavour before you. Over 27,000 eggs were distributed last year amongst the various deserving Metropolitan Hospitals, and this year the promoters are anxious to exceed this total to a considerable extent. Will you help? The collecting will begin on May 12th and finish on May 19th, and the Editor of "The Poultry World" will be glad to receive, at his office at 154, Fleet Street, London, as many new laid eggs as our readers can spare from their store. All eggs should be well packed and sent carriage paid. It is needless to say that this scheme is highly appreciated by the hospitals and their patients. Again, we ask, will you help?



A corner on Lord Rothschild's poultry farm at Tring.


[Copyright.]



## NON-PROVEN.

### Observations on the Paynter Experiment.

By EDWARD BBOWN, F.L.S.

OMEWHERE I have heard of an old lady who remarked that "she had a great many troubles which never happened." We may say that attempts are frequently made to demonstrate that which has not yet been proved. Perhaps, however, it is well to show the unrealised, as well as the realised, possibilities in poultry-keeping, though that was apparently not the intention of either the Board of Agriculture and Fisheries, the Cheshire County Council, or Mr. Paynter himself. The assumption of all concerned was that the system operated at Haslington Hall, during the past year, had arrived at the stage of demonstration, in that it could be carried out successfully, and that a year's records would prove smallholders could by its adoption make a large profit in rearing chickens for market. That was the initial mistake. I am not suggesting whose was the responsibility. Such is not within my knowledge. It would almost appear from such interviews as I have had that it was due to officials and others, who make no claims to practical knowledge of poultry, who did not appreciate that the system was experimental, and had not attained the demonstrable period. That undoubtedly accounts for the prominence given to what was a test, a valuable test, and one which the public authorities named were fully justified in undertaking, but which was nothing more.

#### CHICKEN REARING PROFITABLE.

It may be well at once to state that chicken raising is profitable, in many cases yielding large returns for the money and labour expended, when in conjunction with ordinary farming, whether the farms be large or small, or by cottagers who limit their operations in accordance with their opportunities. That fact requires no proof, as the evidence is, and has been, abundant. There need not be the slightest hesitation in saying that smallholders can do much in that direction. In fact, I am confident the success of small-holdings in this country will depend largely upon the linking of poultry-keeping with cultivation, either for the production of chickens, or ducklings, or eggs. The Paynter system, however, is a totally different proposition, by reason of its intensiveness and the continuity over almost the entire year, needing considerable capital and skill,

and persistent labour. There can be no question that if it could be carried out successfully it would add one more to our rural industries, and be a great boon individually and nationally. That Mr. Paynter is very skilful and a devoted worker everyone who has met him must recognise. What the Board says in respect to his efforts is not one whit too strong, for it is fully deserved. Whilst enthusiastic, and no man without that virtue is worth anything, my own view is that generally speaking his ideas embody much of sound common sense. I am sorry that he has not succeeded. No man can command success, he can alone deserve it.

#### THE AIM AND REALIZATION.

It may be well to state what this experiment was designed to prove. It was claimed that in twelve months on a holding of four acres, with a capital of £300, four thousand chickens could be reared to realize 3s. each, the food cost of which would be £250, that is, an average of 1s. 3d. each for food. On that basis a net profit of £200 or 1s. per bird would be realized after payment of all expenses, the only additional labour to that of the owner would be a boy or a girl.

The realization was that the estimate of capital proved correct. The equipment cost £219 3s., and the margin up to £300 was required as floating capital. The number of chickens marketed was 3,471, inclusive of 135 bought as day-olds. The food cost was £275 7s. 5d., or an average of 1s. 7d. each. The average realised price per bird sold was 2s. 10½d., so that the estimate was out by 5¼d. per bird, in itself a substantial profit, which together with 529 fewer chickens sold than suggested explains the failure. Had the birds cost in food 1s. 3d. each, and sold for 3s., the difference on those actually disposed of would have been £83 3s. 1¾d., a greater sum than the profit made, and which would have brought that profit up to nearly £150.

#### FINANCIAL RESULTS.

The balance sheet is on the whole very complete. Rent and interest on capital are charged, and also depreciation on plant at 7½ per cent. The last named, amounting to £16 8s. 9d., is too low considering the short life of a portion of the equipment and should be at least 12½ if not 15 per cent. Even at 12½ per



cent., in future years renewals and repairs would have to be allowed for. This extra 5 per cent. would involve an additional annual charge of £10 19s. 2d., bringing up the depreciation from £16 8s. 9d. to £27 7s. 11d. No allowance is made for wages of boy and girl referred to, who in the case of a smallholder might be members of his own family, in which case their services would come out of the profits, although they would have to be maintained. Some allowance should be made for these, which could hardly be stated at less than 10s. per week for the two. If hired help the cost would be greater. On this basis, the balance would be as follows:—

	£	s.	d.	£	s.	d.
Net profit ... ..				55	11	2
Plus experimental and oil used in house				10	16	1
				66	7	3
Less additional depreci- ation ... ..	10	19	2			
Less boy and girl ...	26	0	0			
				36	19	2
				£29	8	1

This makes the result so much worse than what has been published, but is a correct statement of the year's working. In the report it is suggested that £22 15s. 7d., carriage on eggs, carting, and wages for this work, would be avoided provided a supply of eggs were obtained locally, which is true, unless higher prices had to be paid. Something would probably have to be added for collection. Supposing that were £10, the net profit would then be £42 3s. 6d.

Comparing, therefore, the assumption with which the test was commenced, namely, a net profit of £200, with the realisation, which is on the most favourable basis of £42 3s. 8d., the verdict must be, at least, "not-proven." Anyone could put £300 to a better use than a return of 16s. per week, plus the hard and laborious toil over an entire year, or, if interest on capital be added, 22s. per week.

#### GENERAL OBSERVATIONS.

I do not propose to go into detail as to many of the points brought out in this interesting report, as that has already been done. There are, however, several which call for special mention.

Of the 9,897 eggs purchased, 1,690 proved to be infertile, a fraction over 17 per cent., which, considering that all the eggs were purchased, and had to be brought from a distance, was not excessive. These infertiles, if removed at the

right time, would have some value, say, £5, although such is not credited. If used for feeding chickens that fact should be recorded, as it increases the food cost. Mr. Paynter's idea is that in a properly organised scheme of operations other smallholders would keep the breeding stock, so that there would be a local supply. Such could only be a work of time. To dump down a plant like this in any district no one could expect reliable eggs would be forthcoming at the outset. I cannot, however, agree with critics who have objected to the purchase of eggs, and would remind them that to a large extent the duck industry is based upon such method. It is a question of organisation, which can alone be accomplished gradually.

#### DEATH IN SHELL AND MORTALITY.

The degree of infertility, therefore, is not a serious factor. It is in other directions we have to find explanation of the failure, mainly as to abnormal death in shell and mortality in chickens, both of which were disastrous in the extreme. It is stated that 3,885 fertile eggs failed to hatch, that is, 39.25 per cent. of the total eggs, or omitting infertiles and broken eggs, 49.09 per cent. of the vitalised embryos failed to arrive at the hatching stage, dying in the embryonic period. As a result the egg cost per chicken was 4½d., a handicap at the start which is serious in the extreme. In our Theale experiments the egg cost was less than 1½d. per bird raised. In justice to Mr. Paynter it may be explained that these experiments were on a much smaller scale, were restricted to the spring months, and the eggs were produced on the place.

The total number of chickens hatched was 4,028, in addition to which 135 were bought as day-olds, making 4,163 in all. Of these only 3,471 were marketed, leaving a margin of 692. The report states that many were killed by stoats, but not how many and at what ages. Losses there will always be, but a mortality of 16.62 per cent., or nearly one in six is fatal to profit. The combination in these two directions was enough to wreck any enterprise of this nature. Of the fertile eggs, plus the day-olds bought, chickens to the extent of 43.13 per cent. only were sold. No enterprise of this class could stand such leakages.

#### FOOD COST.

A further point is the food cost which was an average of 1s. 7d. per bird marketed. That was 4d. above the original estimate. In our Theale experiments the food cost to 13 weeks was less than 7d. each. It is quite true that the weights attained were much less, but the prices realised



were nearly as good. In these the food cost per pound of weight gained was less than  $3\frac{1}{2}$ d. At Haslington it worked out at  $4\frac{3}{4}$ d. per pound gained. That is the true test. If the increased weight is unprofitable and costs more than it realises, then the result is adverse.

A further point is that the method of marketing was unsatisfactory. Selling alive for killing is a bad plan. If that were to be done disposal should have been three or four weeks earlier and to a fatterer. The average return works out at 2s.  $10\frac{1}{4}$ d. per bird. As the total cost was 2s.  $5\frac{1}{2}$ d. each the margin was only  $4\frac{3}{4}$ d. On that basis an adequate profit is impossible.

#### MONTHLY AVERAGE RETURNS.

A final consideration is whether rearing chickens can be profitable on these lines all the year round. On the basis named, that is, an average cost of 2s.  $5\frac{1}{2}$ d. for production, the sales recorded show the profit and loss per bird in each of the nine months to be :

			s.	d.	
April	...	...	1	$3\frac{1}{2}$	profit.
May	...	...	1	$0\frac{1}{2}$	"
June	...	...		$9\frac{1}{2}$	"
July	...	...		$6\frac{1}{2}$	"
August	...	...		$3\frac{1}{2}$	"
September	...	...		$0\frac{1}{2}$	"
October	...	...		$1\frac{3}{4}$	loss
November	...	...		0	equal.
December	...	...		$3\frac{3}{4}$	profit.

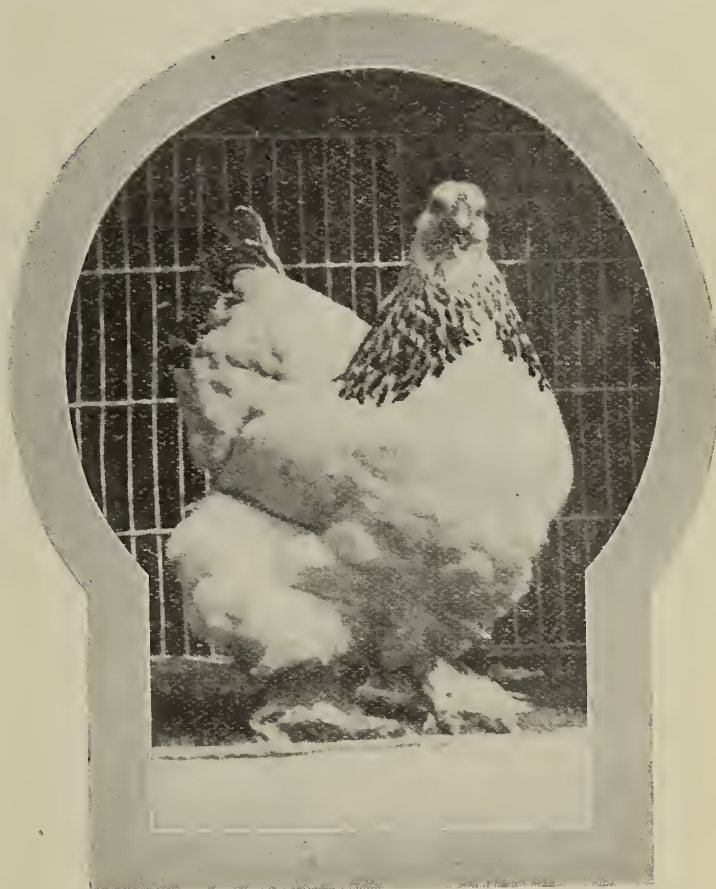
Therefore, only two months showed a profit equal to or above the 1s. per chicken anticipated. No other conclusion is possible than that on this system, and with the expenses and losses which took place, for six out of the nine months chicken raising is unprofitable to a smallholder, even if he be as skilful as Mr. Paynter.

#### THE OTHER SIDE.

The first thing to submit is that in this experiment Mr. Paynter's ideas were not carried out. In an interesting interview with him when visiting Haslington Hall, I found he agreed with me that to be successful, chicken-raising on these lines must be linked with cultivation. His idea was that there should be three times as much land as is given up to the birds in any one year. After discussion he accepted my own view that it should be four times as much, and arable land at that. If that could be done on a farm of sixteen acres, though the size is not important if the principal be accepted, it would be divided into four parts, on one of which chickens would be raised for a year. It would then be planted with roots in the second, with grain in the third, and clover in the fourth, reverting to poultry in the fifth, and so on. To carry this out the operator

would require to be a farmer, as well as a skilled raiser of chickens. He should be able to make a substantial profit from the cultivated areas, thus utilising the manure and sweetening the soil. The whole scheme ought to have been tested, for its success would depend upon the union of chicken rearing with cultivation. Had that been done, and the work gradually developed, affording time to organise an egg supply, and the hosts of visitors been excluded, the results might have been different, at least in the later years. Experimental work requires time. It cannot be hustled, and the conditions must be favourable.

The use of the term "demonstration" was a serious mistake, for that implied showing what was undeniable. Had it been called an experiment there would have been no failure to report.



A Typical Light Brahma. [Copyright.]

#### TRY AGAIN.

Whilst, therefore, the statements made are "Non-proven," it is only fair to Mr. Paynter that further opportunities should be afforded him of seeing whether better results can be secured. All will watch with added interest what takes place in Cambridgeshire this year. What should be done is to make that a complete experiment all round, chicken raising and cultivation, to allow time for organisation of an egg supply, and to even more completely exclude visitors than has been announced.



## POULTRY FARMING IN CANADA.

BY ELIZABETH KEITH MORRIS.

CANADA, an agricultural country, is now obliged to import eggs for home consumption. Ten years ago between ten and twelve million dozen eggs were exported to England, and before that time, even greater quantities were shipped annually to the United States. These facts are illuminating, and should be recognised by those ill-informed pessimists who so loudly assert that "everything in the Dominion is overdone." This shortage of eggs in Canada is due to various causes. From the time that mixed farming became general in the central states the United States egg crop has been able to keep pace with the demand, and formerly, when there was a shortage in Canada, eggs have been available on the Chicago and other large western markets. Last winter, however, the usual surplus was not available because of the increased consumption on the part of the Americans themselves and through a slightly smaller egg crop. In actual receipts the United States' crop is possibly not much smaller than previous years, but owing to the extremely mild weather, the winter production was phenomenally large with a corresponding falling off in spring production. This meant a short crop for storage, and storage eggs are what largely supply the demand during the winter months.

Canadians, too, consume more eggs than formerly, and this increase is not confined to the cities. Farmers are depending more upon their hens for food, as in many rural districts it is practically impossible to secure fresh meat at certain seasons of the year, and salt pork becomes very monotonous at every meal. At such times eggs are usually plentiful and are used freely by the housewife and the bachelor. To the latter these are a godsend as he can easily learn to boil, poach or fry an egg.

In the cities, despite high prices, eggs are in constant and ever increasing demand, because they are wholesome and nourishing and can be served in so many different ways.

### GOOD QUALITY REQUIRED.

It is very essential that would-be poultry farmers should realise the necessity of producing a good quality of eggs, as Canadian eggs, marketed at the period of high production, are far from being of the high quality that one would expect. From information in the possession of the live stock branch of the Dominion Department of Agriculture, it is estimated that in the summer time not more

than 33 per cent. of the eggs received in the large markets grade "select." About 40 per cent. grade "stale," approximately 17 per cent. "very stale," 5 per cent "dirty," and "broken," and 5 per cent "bad." Some dealers state that as high as 10 to 12 per cent. of their receipts prove, upon examination, to be wholly unfit for food. This latter is a feature which those who criticise the present high prices, and Canadian housewives have complained in no measured tones, do not seem to have taken into consideration.



On a Canadian Poultry Farm. [Copyright.]

### A CHANCE FOR MAKING MONEY.

There is undoubtedly an excellent living to be made near every town by women who really understand poultry farming. Haphazard knowledge is worse than useless and spells failure in Canada as surely as in England, but to the experienced, capable and adaptable woman, I say; go to the Prairies or British Columbia and success awaits you there. There is always a big demand for eggs and chickens and I have met British women who have given me practical proof of their success. They have frankly stated that it has meant work and the absence of much that they were accustomed to



at home but they felt more than compensated for any discomfort by the returns, the peculiar charm of Canadian life, and the opportunity afforded them to work out their own salvation.

On a poultry farm equipped with houses, runs and water, two women could manage five



**A popular type of house in Canada.** [Copyright.]

hundred fowls. By systematically weeding out the poorer layers it is possible to bring the average laying of hens up to 150 eggs a year. By taking the actual results of over ten dozen eggs per hen, some idea of the profits of poultry farming can be given. Should the market price be from twenty-five to sixty cents a dozen, an average price of thirty-five cents a dozen can be counted on, or a gross return of \$3.50 each fowl. Feeding will cost about \$1.25 a year for each fowl, which leaves a net return of \$2.25.

Several of the land companies in British Columbia are anxious to encourage the settlement of women farmers in their midst. The principal of the Columbia Valley Irrigated Fruitlands, whose headquarters are at Invermere in the beautiful Windermere district of the Columbia Valley states: "That the opportunities for making a comfortable living out of chicken raising are nowhere in the world greater than in British Columbia, where so much of this produce is imported and fetches high prices. The Company has the greatest confidence in recommending young women who are fond of an out-door life to club together in small groups and run poultry farms with small gardens attached. Every assistance will be given to such."

Alberta offers similar opportunities. Near Alix, Alberta, two women, who were the first to take the short course in poultry at one of the big Canadian agricultural colleges, established their chicken ranch. Their efforts met with almost instantaneous success. They consider that the market for poultry in Alberta is

practically unlimited and it is impossible to supply the demand.

They sell practically all their birds to the railway dining-car service, but in the larger towns the hotels and butcher shops will take any number of birds properly prepared, and pay fifteen to twenty-two cents a pound for them, according to season. Milk fed birds will bring twenty to twenty-three cents a pound, and eggs will sell at forty to sixty cents a dozen, with the demand unlimited.

#### CANADIAN METHODS.

Any woman, wishing to take up poultry farming in Canada and lacking experience and knowledge would do well to get her training there. In poultry farming just as in everything else, the climate, existing conditions and all the other peculiarities inseparable from a country in the making, call for different methods. Finally Canadians best realise the requirements of their own country.



**The Authoress in her buggy.** [Copyright.]

#### Egg Prices at Johannesburg.

A list has been published of the prices at which eggs were sold in the Johannesburg (Transvaal) Market during 1913, which is of interest. The designations given are, "new-laid," which we understand, and "fresh laid," which we do not. Probably it means not preserved, and, therefore, may include kept eggs of various ages. The records are:

			New-laid	Fresh-laid.
			per doz.	per doz.
			s. d.	s. d.
January	...	...	2 6	1 3
February	...	...	3 0	1 9
March	...	...	3 6	1 3
April	...	...	3 9	1 5
May	...	...	4 0	1 9
June	...	...	2 3	1 9
July	...	...	2 3	1 6
August	...	...	1 6	1 1
September	...	...	1 6	1 0
October	...	...	1 6	1 0
November	...	...	1 6	1 0
December	...	...	1 9	1 1

It should be remembered that May south of the equator corresponds to our November, that is, seasonally.



## THE FOOD-STUFF TRAVELLER.

An Indictment of a certain class of Salesman who is becoming a Poultry-Yard Pest.

—:O:—

BY A. T. JOHNSON.



DURING the last few years the intensely ingratiating gentleman who calls on the farmer to solicit the latter's orders for fertilisers, food-stuffs, seed, and what not, has shown an increasing tendency to include something for the poultry-keeper in his leather bag. Sometimes the exclusive poultry-farmer is attended by this predatory fellow, but more often it is the agriculturist or small-holder who makes poultry a part of his undertaking that is the victim. And it is because this traveller is paying more and more attention to our section that I feel justified in referring to him here and including him among the pests of the poultry-yard.

In the "good old days"—and bad enough some of them were—when little if anything was heard of artificials, patent meals, laying spices, and the rest, the farmer could go down to his labour without the remotest fear of being buttonholed half-a-dozen times a day by a traveller. To-day one is never safe from this leech who, at any hour, at any season, may dog one's footsteps with his bag of samples, his volumes of literature and testimonials and persistent manner. I am by nature a mild sort of a man, but I confess to having more than once experienced a sudden feeling that I would like to do one or other of these callers some "grievous bodily harm." But, though they aggravate you by their utter indifference to your repeated assertions that you do not wish to place an order with them, and do not intend to do so, their natural suavity and the staggering politeness of their impertinence is completely disarming. The means of attack employed by these rapacious wanderers varies with the individual. One will have the presumption to tell you that you are quite at sea and certain to remain there unless you go in for some of his stuff; another will abase himself before you and whine for "a small order"; yet a third will be the soul of affability, a fine talker, a teller of funny stories, a liberal man with cigars (and other things if you are near an hotel) and—well he is so cocksure that "it will be allright," that he will see that a few bags of his comestibles are at your nearest station in a few days. And without waiting for an answer he is off to find other prey.

Some years ago I had two bags of "patent laying meal" sent to me in just such a manner.

They were never claimed at the station and, if they were not sent back to the firm, were probably fed to the station-master's hens. That sort of thing is annoying enough, though it may not actually cost you anything, but I think the traveller who will not go away unless you, from sheer desperation, give him an order to get rid of him, is the worst form of this worry. For in the first place, you are buying what you do not want and, by doing so, encouraging the fellow to come round again; and, secondly, you are humiliating yourself before one whom you would rather knock down. I gladly make exception of some travellers who have come my way—men who have the decency at least to give you credit for knowing your own mind, who never impose themselves rudely upon you, and who impress you with the feeling that the commodity which they are out to sell, like good wine, "needs no bush." But they are rare.

The enormous quantity of food-stuffs now on the market must, I suppose, bring about a kind of struggle for existence. Those firms which rejoice in a "name" can afford to show some independence of spirit. At any rate they do not send their emissaries into the highways and hedges for customers, whom they must bully with the vigour of a Yankee drummer or perish. And it is only fair to the advertisers and vendors of poultry-foods who are well known to poultry-keepers through the specialist press to say that it is not to them that I am referring here. It is not they who tout the country-side for orders. They are among the sufferers. It is the minions of obscure firms who depend entirely upon their travellers for a sale who are the nuisances, and there is abundant evidence to show that both the manufacturers and the salesmen of these exploited goods know as much about poultry foods, grits, shell, and "laying spices" as a brass monkey knows about the man in the moon. Yet, though grossly ignorant of the requirements of laying hens or chickens, they will take it upon themselves to expound the special virtues of their odorous spice, and its wonderful effect as an egg producer, upon all and sundry. And not only do they often ask 25/- a hundred-weight for this stuff which would be dear at 5/-, but they get it, and their means of so doing leaves a greater evil in its wake than the ruffled temper and wasted time which result from the



bagman's visit. I refer to the almost universal use of the credit system by these men. The traveller calls upon, say, some struggling small-holder who is undergoing the trials of his first two or three years. The request for an order is probably refused. But the tyrant pegs away until he has reduced his victim to the verge of exasperation then assures him of his "good faith" somewhat like this: "It is not your money we want. That will do any time—this day next year if you like—we only want you to prove to your own satisfaction that all we have to say about our 'Lay-Egg' is absolutely true. Try a sample bag, and if it don't fulfil your expectations you need not pay for it. I am here to bring to your notice the sterling qualities of this meal, not to take your money. Once you have tried it I shall have no need to call again for you will certainly give us a

a carelessness in business; it demoralises one's integrity and self respect.

If the spice or food were always what it is made out to be, which it is not—if it were any good the matter might assume a different aspect. As it is we are pestered by the employees of firms whose products are indifferent to put it mildly, and which would seldom get an order save in the manner I have tried to describe. Then there is the outrageous prices asked for these compounds, and they are outrageous because of the long credit system, the innumerable bad debts incurred by trades of this sort, and the margin to pay the traveller his expenses and commission upon which he lives and talks.

Let me offer a concrete example. At a recent meeting of the Denbigh County Council the official sampler reported that out of ten samples of cattle foods examined, six were unsatisfactory,



**Early-Hatched White Wyandottes.**

[Copyright.]

standing order. . . . Now sir, kindly sign,—here, if you please—Why! an influential farmer like you, sir, . . . and so on until your dinner gets cold, and your men, having finished their's, are hanging about waiting for instructions.

To many people, perhaps most, it is much easier to give an order on long credit under such circumstances than it is to write a cheque. The traveller knows that and works upon it. But the day of reckoning comes. The stuff has got to be paid for sometime, and then you feel like cursing the day upon which you were fool enough to be badgered into placing the order. This credit system may in some cases be helpful—such as in the purchase of seed by farmers for example—but generally it is bad in principle, bad in practice, bad in every sense. It breeds

and their prices unreasonable. Some "dairy cake" contained an excess of cotton fibre; "fattening meals" were deficient in oil; and a sample of "dairy meal" contained only 9 per cent. of oil and 20 per cent. of albuminoids. This last was priced at £27 10s. per ton! The Council was advised that these meals were worth no more than £7 or £8 per ton, and it "called the attention of the farming community to the high prices paid for many of these meals which had a fancy name and were merely ordinary materials with a little spice added." That is the sort of thing from which the poultry-keeper is no more exempt than the farmer. And as our industry increases so the man with the aromatic elixir of successful poultry-farming in his bag increases also. The moral is obvious.



## CONSTITUTIONAL VIGOUR IN POULTRY.

By "STATISTICIAN."



IN view of the pressing importance of maintenance of vigour in domesticated poultry and the dangers accruing from modern methods, I shall be glad of an opportunity of calling special attention to a valuable report written by Mr. C. A. Rogers, and published by the Department of Poultry Husbandry of Cornell University, to which a reference was made by Mr. Edward Brown in your March issue. So far as I am aware, very little attention has been paid to this record of two years' work in this country; perhaps because the effects are not yet so pronounced as in America. We are, however, following in their footsteps. Those who have seriously studied this question assure me that we are heading for disaster unless facts are recognised, and ways of action changed.

The Bulletin (No. 318) is too long to quote, as it consists of 42 pages, and it can only be summarised. There is a multitude of tables and diagrams which deserve careful study. Perhaps, however, it will be enough if the conclusions arrived at are given in full.

During the first year the plan adopted was as follows, quoting from the report:

"Considerable anxiety is being expressed regarding the large mortality among fowls, and especially among chicks. The recent losses have been sufficiently heavy to dampen the ardour of many previously successful poultry breeders and in not a few instances to financially embarrass or totally discourage others. The lack of a tangible cause to which this large mortality may be attributed intensifies the seriousness of the situation.

In order to learn whether constitutional vigour is a strong deciding factor in the control of this condition, the experiments herein reported were made. The results are among the first obtained from a series of experiments, observations, and comparisons on constitutional vigour in poultry at this experiment station.

The object of these experiments was to obtain data on the relative power of production and reproduction of pullets which, under the influence of quickly digestible and nourishing foods, were able to overcome an apparent weakness, in comparison with the power of those of their sisters which under the same management had at no time shown weakness. In addition to the practical information obtained on proportionate egg yields, food consumption, and mortality, there is special significance in the influence of such parentage

on the fertility and hatching power of the eggs and on the constitutional vigour of the chicks hatched.

Early in the summer of 1907 a large colony of chicks showed at ten weeks of age such uneven growth, and so much difference in health, that separation into a strong and a weak flock was advisable. The stronger chickens were given ideal range conditions, with grass pasture and abundant space and shade. They were hopper-fed with whole grain, dry mash, grit, and oyster shell. Under these conditions the chicks continued their normal growth.

The grain mixture given consisted of 3 pounds of cracked corn, 2 pounds wheat, and 2 pounds hulled oats. The dry mash mixture was made up of equal parts by weight of corn meal, wheat bran, wheat middlings, and bone meal, with 4 pounds meat scrap and 0.4 pound charcoal. The pullets consumed about eight to ten times as much of the whole grain as of the ground mixture.

The weaker chickens were placed in fattening houses with small yards, having little grass or green food available other than that brought to them. They were given a fattening ration of 100 pounds corn meal, 100 pounds oat meal, 100 pounds whole wheat middlings, and 42 pounds meat scrap, mixed rather soft with sour milk and fed morning and night. Under this care the weak chickens began at once to improve. They increased rapidly in weight and their feathers became sleek and smooth in contrast to their previously ruffled, unkempt condition. As they reached the broiler stage the cockerels were marketed, leaving only pullets. By this time many of the pullets had developed so satisfactorily that they would have been retained by most farmers for laying, or even for breeding purposes.

The best thirty white Leghorn pullets from the fattening pen were leg-banded and transferred to a range, with the same number of their stronger sisters; these were also leg-banded, to be used later for comparison. Both lots remained under these conditions until placed in the laying pens in the fall, at which time they were known as pens 78 (strong) and 79 (weak).

At the time of this selection (August 3, 1907) the weaker pullets averaged 0.75 pound in weight, while their stronger sisters averaged 1 pound."



The second experiment consisted also of white Leghorns, and the third were of Barred Plymouth Rocks, selected and treated in a similar manner.

In the second year observations were continued with the same fowls, in addition to which however, the progeny of the first year birds were again selected. All the pullets matured from the weak flocks were saved. If the number in the strong flock exceeded those in the weak they were culled to an equal number. No further selection was made. Full records were kept throughout as to food consumed, egg production, incubation results, etc.

There are many valuable records given, and as might be expected, the returns are almost entirely in favour of the strong flocks. It could scarcely be anticipated that the weak flocks would consume a greater amount of food than the strong, yet such was the case. In several instances, however, the mortality was greater in chickens bred from the progeny of strong flocks than those from the weaker, and the fertility and hatching power of eggs varied considerably. The true test is the general averages, and as will be seen by the quotations given below, these were decidedly in favour of the stronger birds.

It is evident from the records that whilst the flocks were divided into weak and strong, the latter were not abnormally deficient. Sometimes birds which do not make rapid growth ultimately prove to have a reserve of strength not evident at the outset, as that strong, virile chicks sometimes grow faster and develop rapidly, for which ultimately they have to pay a penalty.

The preferable plan will be to give the summary and conclusions arrived at in this valuable bulletin, retaining American values and reference numbers:

#### THE COMBINED TWO YEARS' WORK WITH THE ORIGINAL FLOCKS.

A marked contrast is found existing between results with the same pen for the first and the

second year. The combined work of the two years, therefore, eliminates this varying factor and provides a safer foundation on which to base conclusions. Only the more important parts of the work are thus summarized.

#### FOOD CONSUMPTION AND EGG PRODUCTION.

It is shown in table 1 and fig. 166 that a dozen eggs were produced by the strong pens on 0.45 pound of food less than was required by the weak pens. In one individual comparison only, the Plymouth Rocks, the weak pen produced at a more economical rate.

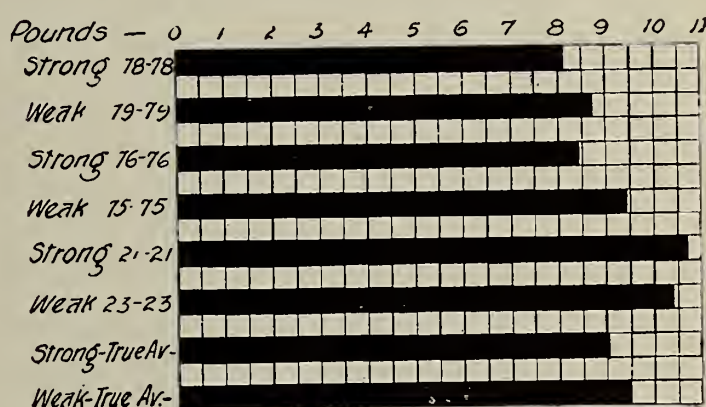


FIG 166 — The amount of food required to produce one dozen eggs Average for two years

The cost per dozen eggs, computed on the basis of the cost of food only, shows a similar relationship between the strong and weak pens. The average of all experiments shows that the strong fowls produced a dozen eggs at a cost of 1.2 cent lower than did the weak ones.

The same relative comparison between the strong and weak flocks holds with the value of eggs produced and the balance profit, as shown in table 2. In the two years the average strong fowl made a balance profit nearly fourteen cents more than that of the average weak fowl. An exception is noticeable here, also, in that the weak Barred Plymouth Rock flock netted a higher balance profit than the strong flock. This exceptional result is due to the unaccountably heavy mortality in the strong flock, since

TABLE 1. AMOUNT OF FOOD REQUIRED AND COST OF FOOD FOR ONE DOZEN EGGS.  
(True average for two years)

	Summer selected.		Fall selected.				True average.	
	White Leghorns.		White Leghorns.		Barred Plymouth Rocks.			
	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak
Pen .. .. .	78—78	79—79	76—76	75—75	21—21	23—23	.....	.....
Pounds of food required to produce 1 doz. eggs	8.15	8.69	8.45	9.42	10.64	10.40	9.05	9.50
Cost of food per doz. eggs .. .. .	\$0.121	\$0.129	\$0.126	\$0.140	\$0.157	\$0.166	\$0.133	\$0.145



TABLE 2. FINANCIAL STATEMENT PER HEN.  
(True average for two years)

	Summer selected.		Fall selected.				True average.		Difference.	
	White Leghorns.		White Leghorns.		Barred Plymouth Rocks.					
	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak
Pen .. .. .	78—78	79—79	76—76	75—75	21—21	23—23	.....	.....	.....	.....
Value of eggs .. ..	\$2.784	\$2.796	\$2.615	\$2.174	\$2.893	\$2.787	\$2.769	\$2.609	\$0.160	.....
Value of gain in weight ..	0.030	0.017	0.012	0.014	0.014	0.013	0.060	0.069	.....	\$0.009
Cost of food.. ..	1.210	1.289	1.212	1.123	1.575	1.496	1.327	1.316	0.011	.....
Cost of loss of stock ..	0.010	0.081	0.106	0.163	0.207	0.070	0.103	0.101	0.002	.....
Total income .. ..	2.814	2.843	2.627	2.188	2.907	2.800	2.829	2.678	0.151	.....
Total outgo .. ..	1.220	1.370	1.318	1.286	1.782	1.566	1.430	1.417	0.013	.....
Balance profit .. ..	1.594	1.473	1.309	0.902	1.125	1.234	1.399	1.261	0.138	.....

the total income from eggs and gain in flesh was greater in the strong than in the weak flock.

Percentage — 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36

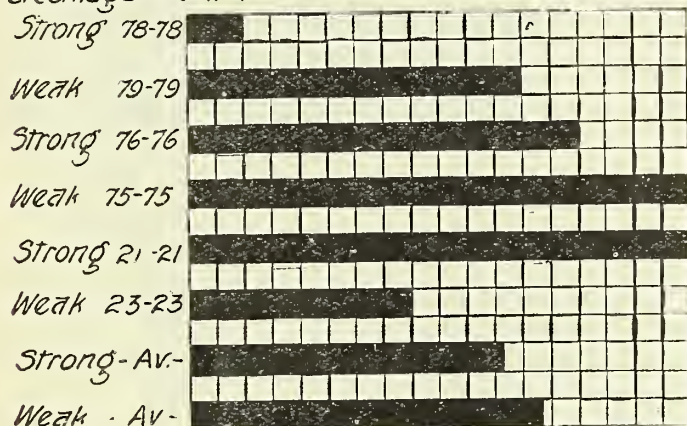


FIG. 167 — The percentage of mortality Total for two years

This greater average profit of fourteen cents per hen for all the strong flocks is due to the marked superiority of the strong white Leghorn flocks over the weak ones. The fall-selected white Leghorn flocks show a difference amount-

ing to 40.7 cents in favour of the strong.

#### MORTALITY.

In fig. 167 it is shown that the mortality was high in all but one strong pen. These figures represent the total mortality for both years and not the average mortality. In one instance, a

Pounds — 0 1 2 3 4 5 6 7 8 9 10 11

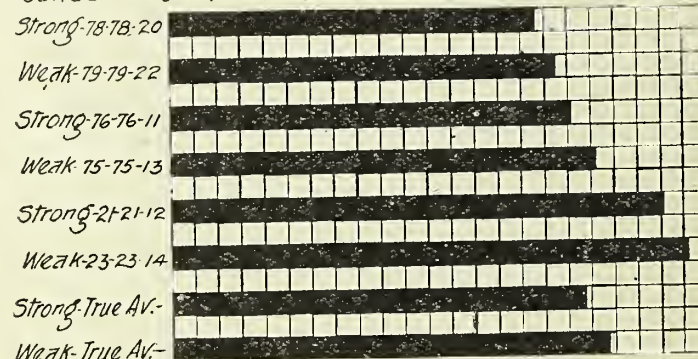


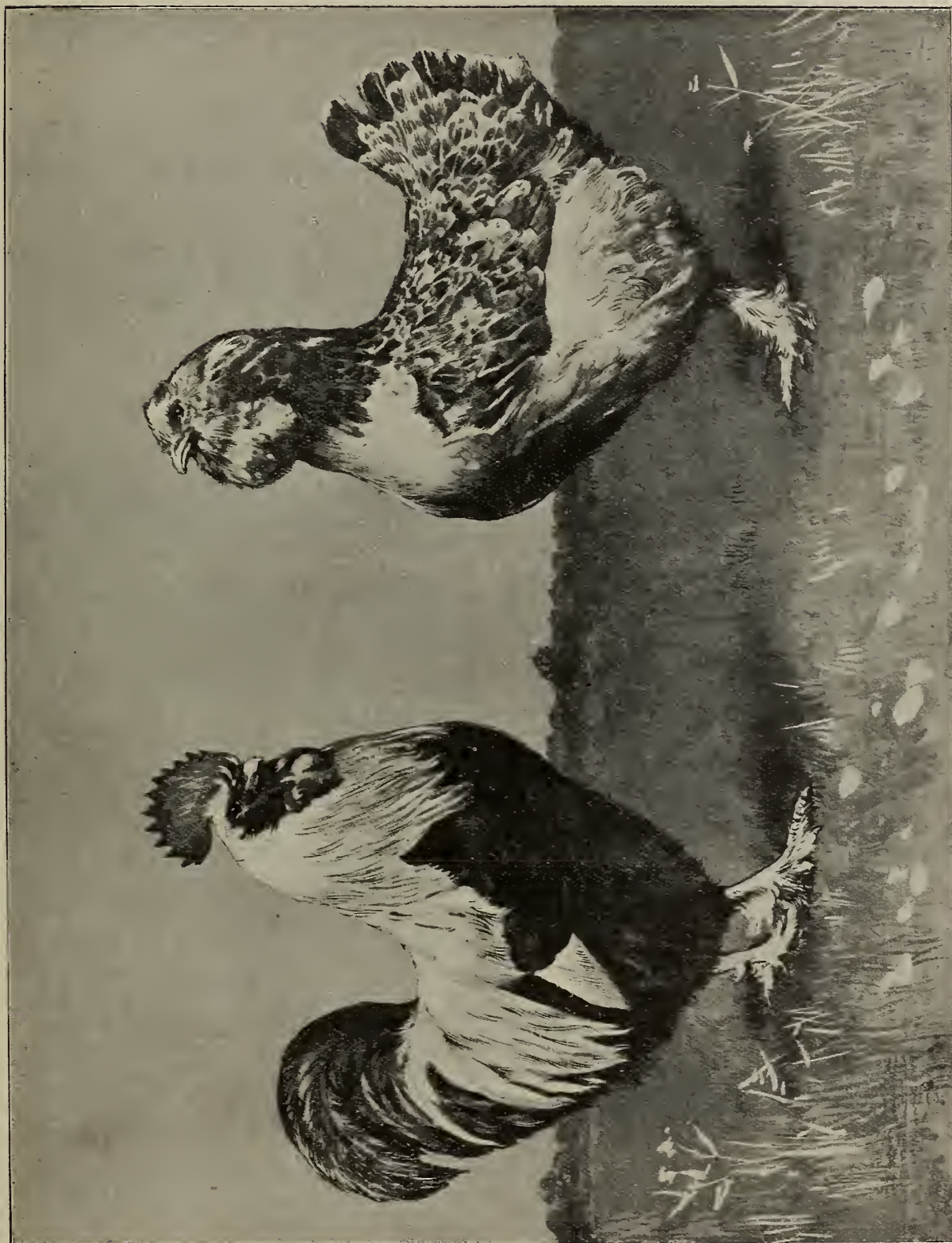
FIG. 168 — The amount of food required to produce one dozen eggs All experiments

weak flock suffered less mortality than did the corresponding strong flock—the weak Barred

TABLE 3. INCUBATION REPORT.  
(True average for two years)

	Summer selected.		Fall selected.				True average.		Difference
	White Leghorns.		White Leghorns.		Barred Plymouth Rocks.				
	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Pen .. .. .	78—78	79—79	76—76	75—75	21—21	23—23	.....	.....	.....
Number of eggs set .. ..	1,338	1,359	666	502	564	526	556	796	60
Percentage of fertile eggs ..	87.3	78.7	87.8	82.2	85.2	79.0	87.0	79.5	7.5
Percentage of eggs hatched to fertile eggs .. ..	63.0	61.9	52.3	43.5	44.2	34.3	56.1	51.9	4.2
Percentage of eggs hatched to number set .. ..	55.0	48.7	45.9	37.8	37.7	27.1	48.9	41.3	7.6
Average weight of chicks hatch- ed (pounds) .. ..	0.079	0.079	0.083	0.082	0.080	0.075	0.080	0.079	0.001





*[Copyright.]*

**A Pair of Salmon Faverolles.**



TABLE 4. AMOUNT OF FOOD REQUIRED AND COST OF FOOD FOR ONE DOZEN EGGS.  
(All experiments).

	Summer selected.		Fall selected.				True average.		Difference.	
	White Leghorns.		White Leghorns.		Barred Plymouth Rocks.					
	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak
Pens .....	78—78— 20	79—79— 22	76—76— 11	75—75— 13	21—21— 12	23—23— 14	.....	.....	.....	.....
Pounds of food required to produce 1 dozen eggs ...	7.82	8.19	8.51	9.13	10.58	11.12	8.86	9.35	.....	0.49
Cost of food per dozen eggs...	\$0.117	\$0.123	\$0.128	\$0.137	\$0.155	\$0.165	\$0.132	\$0.140	.....	\$0.008

Plymouth Rock flock, the exception throughout all these tables. Even with this exception, the average of all strong flocks shows a mortality several per cent. lower than that of the weak flocks.

#### INCUBATION.

The two-year results in incubation given in table 3 show a consistent and decided superiority of the strong over the weak flocks in each of the comparisons, as well as in the averages of

the strong and weak flocks. The average fertility of the eggs from the strong flocks was 7.5 per cent. greater, and the hatching power of the egg 7.6 per cent. greater, than from the weak flocks. The chicks from the strong pens were heavier.

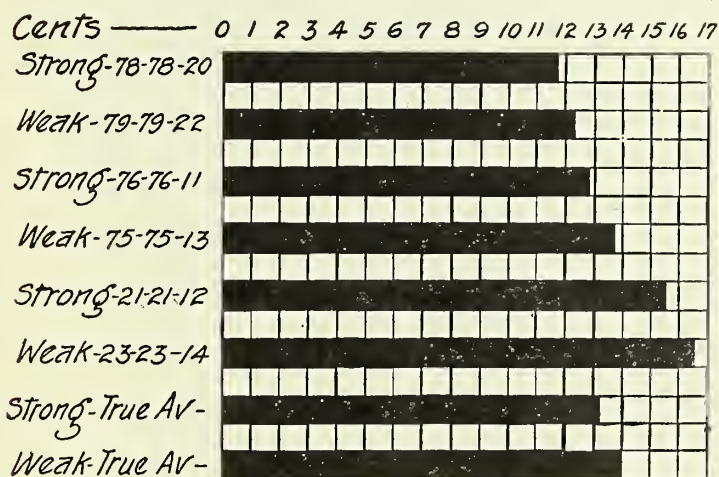
#### SUMMARY OF ALL FLOCKS.

All the data show a consistent advantage of the strong pens over the weak. The few fluctuations among certain flocks did not affect the final superiority of the strong flocks. The differences, however, were somewhat less.

#### FOOD CONSUMPTION AND EGG PRODUCTION.

The comparative number of pounds of food required to produce one dozen eggs and the cost of food per one dozen eggs produced are shown in table 4 and in figs. 168 and 169. In every comparison the strong pens produced eggs at a less consumption of food. The true average of all pens for all experiments shows that the strong flocks used 8.86 pounds of food to produce each dozen eggs, as compared with 9.35 pounds required by the weak flocks. The cost of producing eggs in the strong flocks was therefore slightly less—8 mills per dozen eggs than in the weak flocks.

As shown in the financial statement, table 5,

FIG 169 — The cost of food required to produce one dozen eggs  
All experimentsTABLE 5. FINANCIAL STATEMENT PER HEN.  
(All experiments).

	Summer selected.		Fall selected.				True average.		Difference.	
	White Leghorns.		White Leghorns.		Barred Plymouth Rocks.					
	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak
Pens .....	78—78— 20	79—79— 22	76—76— 11	75—75— 13	21—21— 12	23—33— 14	.....	.....	.....	.....
Value of eggs .. ..	\$3.07	\$3.01	\$2.67	\$2.35	\$2.98	\$2.66	\$2.93	\$2.72	\$0.21	.....
Value of gain in weight .. ..	0.04	0.04	0.02	0.03	0.14	0.18	0.07	0.09	.....	\$0.02
Cost of food .. ..	1.24	1.26	1.23	1.15	1.60	1.51	1.35	1.32	0.03	.....
Cost of loss of stock .. ..	0.04	0.05	0.14	0.15	0.18	0.10	0.11	0.09	0.02	.....
Total income .. ..	3.11	3.05	2.69	2.38	3.12	2.84	3.00	2.81	0.19	.....
Total outgo .. ..	1.28	1.31	1.37	1.30	1.78	1.61	1.46	1.41	0.05	.....
Balance profit .. ..	1.83	1.74	1.32	1.08	1.34	1.23	1.54	1.40	0.14	.....



the strong flocks produced more eggs than the weak sufficient to total 21 cents more per hen. Considering the value of the gain in weight, the cost of stock that died, and the cost of food, there remained a difference between the average

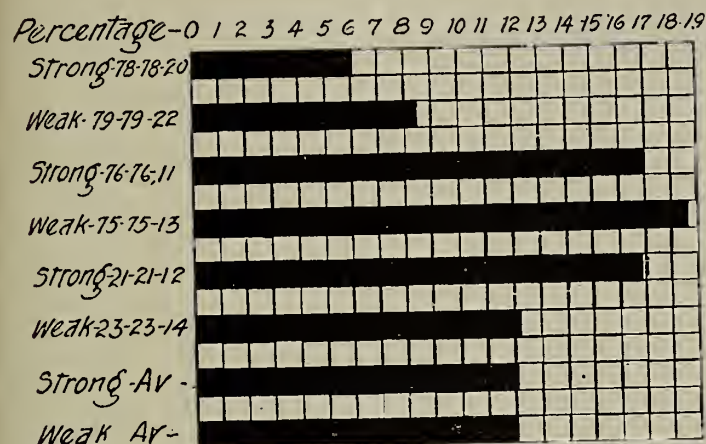


FIG 170 — The percentage of mortality. All experiments

strong and weak flocks of 14 cents per hen in favour of the strong flocks. Although the number of hens in the strong and weak flocks was the same at the start, the total number throughout the experiments was 186.56 for the strong and 177.38 for the weak. The total difference between the income from eggs and gain in weight, and the cost of food and loss of stock, therefore is \$287.30 for the strong fowls less \$248.33 for the weak fowls, or \$38.97. These figures do not represent the actual balance profit, since the labour, incidentals, and interest on capital invested are not included. However, since those factors were the same for all comparison flocks, it can be said that the above figures do represent the comparative profit.

#### MORTALITY.

The mortality was a very variable factor

throughout the experiments. Although the total number of deaths was the same in the strong and weak flocks, it by no means represents the real difference in the vigour of the fowls. There were several deaths due to accident and others to viciousness. Pens 21, 21, and 12, (strong) were the only strong flocks where the mortality totalled more than in the corresponding weak flocks. To all appearances the Barred Plymouth Rocks in these strong flocks were much healthier and more vigorous than those in the comparison weak flocks. The comparative total percentage of mortality is shown in fig. 170.

#### INCUBATION.

In an experiment of this nature the hatching power of the eggs and the economical reproduction and replacement of the flocks usually is of equal importance to the economical production of eggs. Consequently the consistent advantage shown in table 39 by the combined strong flocks, relative to fertility and hatching power of the eggs, should receive due consideration.

The incubation of several thousand eggs from both the strong and weak flocks is sufficient foundation on which to base fairly conclusive evidence. The difference in fertility alone shows an advantage of 6.2 per cent. in favour of the strong flocks. The difference in percentage of eggs hatched to total number of eggs set favours the strong flocks by 4.5 per cent. In other words, for every 1,000 eggs set, 45 more chicks were hatched from the eggs of the strong flocks than from those of the weak flocks. On a basis of 70 cents value for each day-old chick this would represent a value of \$4.50 extra profit from each thousand eggs hatched from strong flocks. In addition, the same table shows the chicks from the strong flocks to be slightly

TABLE 6. INCUBATION REPORT.  
(All experiments).

	Summer selected.		Fall selected.				True average.		Difference
	White Leghorns.		White Leghorns.		Barred Plymouth Rocks.				
	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Pens .....	78—78— 20	79—79— 22	76—76— 11	75—75— 13	21—21— 12	23—23— 14	.....	.....	.....
Number of eggs set .. ..	1,611	1,622	821	680	832	649	1,088	984	104
Percentage of fertile eggs ..	87.7	77.2	85.6	85.8	82.8	79.9	85.9	79.7	6.2
Percentage of eggs hatched to fertile eggs .. ..	56.8	57.5	52.2	45.8	41.1	37.0	51.8	50.1	1.7
Percentage of eggs hatched to number set .. ..	49.8	44.4	44.7	39.4	34.0	29.6	44.5	40.0	4.5
Average weight of chicks hatched .. ..	0.079	0.079	0.082	0.079	0.081	0.076	0.081	0.079	0.002
Percentage of chickens living at the end of six weeks .. ..	64.6	61.2	62.1	65.3	76.6	72.8	66.4	64.1	2.3



heavier, and consequently more fit to begin growth. This fact is illustrated in the table by the percentage of chickens alive at the end of six weeks.

It would seem from these composite tables, therefore, that the constitutionally strong fowls, even though the degree of superior strength is but small, are capable of producing a larger number of eggs with greater economy, more fertile and hatchable eggs, and stronger progeny.

#### CONCLUSIONS

1. The selection of fowls for strong vitality.

even though the selection be slight and exercised but once, increases the productive and the re-productive power of a flock.

2. One selection only, no matter how rigid, is not sufficient to keep a flock permanently superior.

3. The selection of mature pullets is of more value than that of partly grown chickens.

4. Selection at the beginning of the second year is of equal importance to that of the first year.

## A REMARKABLE POULTRY CENTRE.

IT is almost impossible adequately to describe the poultry industry of the greatest egg centre of the world, Petaluma. No series of photographs can show it just as it is, and no written article can place before the eyes of those who have never visited that section of the country a pen-picture of the industry as it is carried on. The two million fowls kept in the Petaluma district are distributed over an area of twenty square miles. The small valleys which nestle among the rolling hills are in themselves small poultry centres. The configuration of the country is such that comparatively few fowls may be seen at one time. One might well wonder why Petaluma, rather than any other particular place, has become so famous as a poultry centre. It has not come by chance, though there are other parts of California, such as Sacramento and San Joaquin Valleys, which are admirably adapted for the keeping of poultry in large numbers. These are fast coming into prominence as poultry-raising sections. The valleys of California that are sheltered by the mountains and have transportation facilities are developing rapidly. Petaluma, in Sonoma County, a city of 7,000 inhabitants, is situated about forty miles north of San Francisco, and is about twenty or thirty miles inland from the coast. It lies on an inlet of the Bay of San Francisco, and is thus connected with the market by water and rail. Its transportation facilities have been an important factor in the development of the industry. It is found that Petaluma, Santa Rosa, Healdsburg, Cloverdale, and other smaller towns in Sonoma County supply San Francisco with about one half of her annual receipt of eggs. Petaluma alone sent out last year 7,159,481 dozen eggs and 120,018 dozen fowls. It is a city which has been built by the hen, and its future depends upon the common fowl. Statistics show that the hens of Petaluma convert from the raw materials the much-demanded finished product, the egg, at the rate of \$4.57 worth per hour, for ten hours a day, for 365 days in the year. This is the result of a gradual process of development. It might be interesting to note that poultry-raising has taken the place of potato-raising, which in turn

took the place of wheat-growing, one of the first occupations of the early settlers in California. At present there is no indication that this industry is receding. The following figures give the exports from Petaluma from 1903 to 1909. To obtain the total production, to these figures must be added the eggs used for hatching, and the eggs and other poultry produce used for home consumption:

1903 ...	...	...	3,407,333	32,535
1904 ...	...	...	3,493,321	32,286
1905 ...	...	...	3,837,061	39,392
1906 ...	...	...	4,334,321	39,938
1907 ...	...	...	4,422,968	39,392
1908 ...	...	...	5,312,804	84,136
1909 ...	...	...	7,159,481	120,018

From this it may be seen that the industry is receiving greater attention, and its value to the country is being realised as never before.

Recent organisation among the producers and a system adopted for grading eggs has given encouragement to more careful methods. There has been established an Egg Exchange based on the co-operative system. The producers deliver their eggs to the Exchange, where they are candled and graded. Of the total produce of Petaluma, only a portion is handled through the Exchange. This seems rather peculiar, since the prices paid by the Exchange are considerably above other quotations. It points to the fact "that farmers are probably the most difficult class of men to engage in any co-operative undertaking." The Egg Exchange, however, is meeting with continued success, and is extending its operations. At the present time it handles eggs only, though it hopes in the near future to purchase foodstuffs and sell them to the producers at reduced rates. The eggs received from the producers are graded into three grades: Nos. 1, 2, and 3. All eggs passing into No. 1 grade must be spotlessly clean, and weigh  $1\frac{5}{8}$  ounces. This makes 1 dozen weigh 22 ounces. No. 2 grade are smaller eggs, while No. 3 are culls and cracked eggs and are used locally. The difference in price between grades No. 1 and No. 2 varies considerably,



from 5 cents. to 20 cents. per dozen. The average price for all eggs, including the washed ones, in 1909, was  $27\frac{3}{4}$  cents.

One only needs to watch the steady growth of the poultry industry at Petaluma to realise the importance of co-operation in the selling of the produce from the flocks. The system established at the Egg Exchange is based upon practical facts rather than theory. Thirty-two years ago there was practically no poultry in or around Petaluma. In the early history of the industry there was no co-operative system; the poultrymen sold their eggs and fowls to the "middlemen." Many of these middlemen represented feed companies and commission houses. When dealing with the grain houses the company often charged the poultryman top prices, in return for which he generally allowed the lowest market quotations for his eggs. The eggs were not candled or graded in any way, being forwarded through the buying agents direct to the markets in San Francisco, Los Angeles, and other places. Now, however, different conditions prevail. The poultrymen are beginning to realise the advantages of improved market conditions. The Exchange, which has been in practical operation

about two years, provides the poultrymen with the special market advantages and is a great educational factor. Probably its value as an educational institution is as great as its value from a momentary standpoint. It teaches the producer the necessity of sending the eggs to the consumer in as fresh a state as possible, and it teaches the consumer the difference in quality between a good and a bad egg. The producer soon realises the benefits derived through adopting improved methods. He receives top prices for his eggs, which have been candled and graded, and sent to the market in strictly fresh condition. He realises that the egg is at its best when laid, and that its value decreases while being held until shipment. He realises that eggs shipped in clean cases, fitted with clean fillers, command the best prices. It represents quality, and the higher the price above the average the greater are the profits.

Co-operation, when properly applied, eliminates the influence as well as the excessive profits of the "middleman." It brings the producer and consumer together, and places the business of poultry keeping upon a staple basis.



A Flock of Laying Hens on an American Farm.

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## VARIATIONS IN IMPORTS OF EGGS AND POULTRY.

IN our last issue it was reported that the imports of foreign eggs had declined in the two months ending February 28th of 1914, by 370,191 great hundreds, or nearly 14 per cent., as compared with the corresponding period of 1913, and that, as a consequence, prices had been much higher. This deficiency has been more than made up in March, when the imports were 786,649 great hundreds

above the same period last year. Thus the total increase for the first quarter of this year is 416,458 great hundreds above the first three months of 1913. The total for March was 2,095,170 great hundreds, that is nearly  $25\frac{1}{2}$  millions. That, however, leaving out British and Irish supplies, is only enough to provide nearly six eggs per unit of our population. All recorded countries sent us larger shipments in



March than twelve month ago, Russia and Austria-Hungary making the greatest increases.

The quantities and values for the two years are :

#### EGGS IMPORTED 1913 AND 1914.

##### Quantities in Great Hundreds.

Country.	March.		Three Months.	
	1913.	1914.	1913.	1914.
Russia ...	149,964	265,816	825,692	738,009
Denmark ...	305,431	341,988	861,007	760,750
Germany ...	59,088	192,282	183,354	335,504
Netherlands ...	94,186	197,600	216,461	369,227
France ..	86,050	108,394	157,885	184,114
Italy ..	136,939	223,980	300,915	425,008
Austria-Hungary	207,874	398,270	436,433	574,282
Other Countries	268,989	360,840	1,057,324	1,068,610
Totals	1,308,521	2,095,170	4,939,076	4,455,534

##### VALUES.

	£	£	£	£
Russia ..	59,470	102,697	362,542	332,560
Denmark ..	155,278	173,708	490,701	447,311
Germany ..	21,023	80,881	77,695	148,959
Netherlands ..	47,285	90,972	113,570	183,489
France ..	40,415	54,731	76,616	103,339
Italy ..	64,937	106,747	152,884	222,488
Austria-Hungary	85,989	166,440	190,295	252,726
Other Countries	83,413	124,586	369,370	394,300
Totals	560,810	900,761	1,833,673	2,085,172

In quantities, Russia and Denmark show an appreciable decline during the three months, and all others separately enumerated record large increases.

In spite of such increases prices have been maintained, and in many cases advanced, showing that demand has grown to a greater extent. The averages per 120 are as follows :

	March.		Three mths. ending March 31st.	
	1913.	1914.	1913.	1914.
	s. d.	s. d.	s. d.	s. d.
Russia ..	7 11	7 8 $\frac{3}{4}$	8 9 $\frac{1}{4}$	9 0 $\frac{1}{4}$
Denmark ..	10 2	10 2	11 4 $\frac{3}{4}$	11 9
Germany ..	8 1 $\frac{3}{4}$	8 4 $\frac{1}{2}$	8 5 $\frac{3}{4}$	8 10 $\frac{1}{2}$
Netherlands ..	10 0 $\frac{1}{2}$	9 2 $\frac{1}{2}$	10 5 $\frac{3}{4}$	9 11 $\frac{1}{4}$
France ..	9 3 $\frac{1}{2}$	10 1	9 8 $\frac{1}{2}$	11 2 $\frac{3}{4}$
Italy ..	9 5 $\frac{3}{4}$	9 3 $\frac{1}{2}$	10 1 $\frac{3}{4}$	10 5 $\frac{1}{2}$
Austria-Hungary	8 3 $\frac{1}{4}$	8 3 $\frac{3}{4}$	8 8 $\frac{1}{2}$	8 9 $\frac{1}{2}$
Other Countries	6 2 $\frac{1}{4}$	6 10 $\frac{1}{2}$	6 11 $\frac{3}{4}$	7 5 $\frac{3}{4}$
General averages	8 6 $\frac{3}{4}$	8 7	9 0 $\frac{3}{4}$	9 4 $\frac{1}{4}$

Some of the variations are very difficult to explain, notably the drop in values of Dutch eggs, and the big increase in French. The fact, however, is there that whilst the supplies in March this year were 50 per cent. greater than in 1913, the average value had slightly increased, and that during the three months with a considerably larger volume the average values had advanced by 3 $\frac{1}{2}$ d. per 120.

So far as poultry imported are concerned both the monthly and quarterly records show declines as indicated by the following tables.

#### DEAD POULTRY IMPORTED 1913 AND 1914.

##### Quantities in cwts.

	March.		Three Months.	
	1913.	1914.	1913.	1914.
Russia ..	17,963	8,222	76,683	99,216

France ..	375	323	4,901	2,867
Austria-Hungary ..	633	137	8,773	5,825
United States				
of America ..	10,526	11,430	45,493	18,135
Other Countries ..	12,661	720	16,269	5,767
Totals ..	42,158	20,832	152,119	131,812

##### VALUES.

	£	£	£	£
Russia ..	47,706	21,784	212,269	310,511
France ..	1,896	1,393	20,253	14,437
Austria-Hungary ..	2,192	450	31,192	21,353
United States				
of America ..	43,235	44,245	178,827	70,496
Other Countries ..	35,565	3,445	50,242	23,842
Totals ..	130,594	74,317	492,788	440,639

What is here stated reveals why poultry have been scarce and high in price. Considering that imported fowls occupy so important a place during the first three months, a drop of half the quantity sends up the prices. In March, 1913, the declared values were 61s. 11 $\frac{1}{2}$ d. per cwt.; in March, 1914, 71s. 4d. per cwt. For the three months the average values were: 1913, 64s. 9 $\frac{1}{2}$ d. per cwt.; 1914, 66s. 9 $\frac{1}{4}$ d. per cwt. Except Russian, which made in the three months an increase of nearly 30 per cent., all other countries have decreased—those from the United States of America by 60 per cent.

With regard to the exports of dead poultry the figures are :

#### QUANTITIES (CWTS.)

	1913.		1914.	
	March.	Three mths.	March.	Three mths.
British & Irish	396	794	63	543
Re-Exports	1,471	2,553	3,246	5,130
Totals	1,867	3,347	3,309	5,673

##### VALUES.

	1913.		1914.	
	March.	Three mths.	March.	Three Mths.
	£	£	£	£
British & Irish	1,817	357	3,663	2,666
Re-Exports	6,762	14,409	12,024	22,695
Totals	8,579	14,766	15,687	25,361

In addition, therefore, to reduction of imports there has been a marked advance in exports, equal to more than 40 per cent., thus further emphasising the tendency to increase of values.

#### Transvaal Laying Competition.

Mr. Reginald Bourlay is to conduct one of these contests at Potchefstroom, Transvaal, from May 1st, 1914, to April 30th, 1915. In this case there will be no need for trapnesting, as every bird has to be accommodated with a separate pen. That will add enormously to the expense of equipment. The result will be interesting.



### THE AMATEUR FANCIER.

THE ideal fancier is neither an optimist nor a pessimist but a philosopher, who takes bad luck with good luck as a matter of course, and I can think of no better advice to give an amateur than to be philosophic when disappointments arise. The wise man will regard these disappointments as part of his education, for they will not only inure him to a state of affairs that is inevitable in the poultry Fancy, but they will set him to discover the why and the wherefore of these happenings. As an instance, it is by no means uncommon for an amateur to purchase a bird that has been winning, only to find that in his hands it fails to gain more than a card. The most likely reason is that the bird has passed its prime or is meeting stronger

shows and knew anything about the points of his breed, he would realise that the bird had less competition to face when he won first prize.

In making a start in breeding and in exhibiting luck plays a very prominent part. I have known an expensive pen, properly mated (?) by a noted breeder, to fail to produce a chicken worth 10s., and on the other hand there are scores of cases where amateurs have made excellent commencements in manner that would, at the least, be considered unorthodox. At Sandy Show, last August, an amateur fancier told me of the way he became an exhibitor of White Wyandottes. He bought several hens from a farm at 3s. 6d. each, mated them with a cock that cost him 12s. 6d., and bred therefrom a number of chickens that won at several shows during the summer, including a special for the best young bird in the show. There must have been some merit about the parents that the vendors did not recognise, but in any case it was a huge slice of luck for this exhibitor, for in ninety-nine cases out of every hundred one might confidently prophesy failure from such a commencement.

However, instances of this kind provide a welcome relief to the many doleful tales of failure, and they serve to encourage fanciers to persevere in the hope that such luck may one day come their way. But they also prove that the expert adviser has a very difficult task in advising beginners how to make a start to the best advantage. Certainly no expert would think of recommending an amateur to buy hens from a farm at 3s. 6d. and mate them with a cock at 12s. 6d., nor would he feel justified in advising a complete novice to invest a large sum of money in breeding stock. My own opinion is that it pays best in the long run to act cautiously in such matters, and to commence with a small breeding-pen mated by a reputable breeder and likely to breed specimens good enough to win at small shows. It is a great mistake for the beginner to fly too high. Let him win at the small shows before he tackles the big ones, and let him study his breed and learn how to manage his birds before he handles valuable specimens. Incidentally, it is impossible for a fancier to breed high-class specimens before he has learned what to breed for.

It is often remarked that exhibition birds purchased from skilled breeders frequently depreciate in value to a very considerable extent in the hands of amateurs. This is perfectly true, and it is due to the fact that nearly all breeds of poultry suffer from exposure. Buff fowls become mealy, white birds stain to a creamy or yellowish tint, bright coloured specimens fade, and even the darker birds lose the brilliance that is so much to be desired in show birds, whilst white lobes become discoloured and the texture of large single combs becomes rough. It is, in fact, quite impossible to keep an exhibition fowl in good show condition when it is given its liberty in an exposed run, and the amateur who becomes possessed of such a bird must provide



**A Corner View on a Belgian Fancier's Yard.** [Copyright

competition, or very likely the amateur is not exhibiting it in the same condition as did its former owner. In any case the amateur must disabuse himself of the idea that a bird that has once won a prize must necessarily be a winner from that time forward. We frequently hear exhibitors complaining that a bird has won first at one show and is only highly commended at the next. "Funny judging," they remark. But there is really nothing funny about it. There may be a score of reasons to explain the discrepancy and in the majority of cases, if the exhibitor attended both



proper accommodation for it if he desires to exhibit it successfully.

Everyone knows the small and useful appliances known as cockerel-pens. These provide suitable accommodation for show birds, having a small box for roosting and a tiny run in which the bird has room to scratch, whilst in the evenings or on dull days the inmate can be let out for an hour or two. As an alternative, or in order to economise to some extent, a range of buildings and runs, partitioned off into small compartments, each to accommodate one or two show birds, may be constructed at little cost and in such a way that the birds are protected from sun and rain and at the same time are enabled to take sufficient exercise to keep them in condition.

## SOME MAY HINTS.

A LATE spring has its advantages as well as its disadvantages, but whatever the weather may be, poultry-keepers can never afford to wait until it improves, and those who have postponed breeding operations until now will find themselves late next laying season, just as they are late now. The only breeds to hatch at the present time with any chance of securing development in time for laying next winter are a few of the smaller quick-growing kinds, and particularly Leghorns and Anconas. Go for utility strains by all means if your object is egg-production. They are not only much more reliable as layers, but they are not bred to the same size, and they develop and come into profit earlier.

In many yards breeding is already finished, and those who keep exhibition stock are breaking up the breeding-pens in order to keep their birds fit for the summer shows. It is a fact that amateur fanciers are always handicapped through inability to keep their few stock birds in fit condition for showing after the breeding season, and with some of the light-coloured breeds it is next to impossible to devote them to both purposes. With others, however, there is a fair chance of winning a few prizes after the breeding season is over, and in such cases the best specimens should be put under cover at once, for spring showers and sunshine make havoc with the plumage. Hens naturally suffer more than cocks in the breeding season, and the only plan to get them into fairly good condition is to pluck out the broken feathers on the cushion and keep them confined in a airy and well-lighted shed or outhouse, letting them out when the sun has gone down in the evening or on dull days.

The amateur will also find it beneficial to pay a little attention to the toilet of his show birds just now. A wash will improve them, whether they be white or black, and the legs should be scrubbed and dressed with paraffin and sulphur if there is any sign of scaly matter. A little sweet oil rubbed on the comb will improve the texture, whilst white lobes may be sponged with luke-warm milk and, after drying, dusted with violet powder. These

are preliminary preparations whose value will be fully appreciated later on.

Attention must now be largely concentrated upon bringing on the young stock, and those who have limited accommodation naturally experience more difficulty in getting birds to grow than those who can make use of an unlimited range. The only way to overcome the difficulty is to use food that will stimulate growth. Meat is an absolute necessity for young fowls in confined runs, and it must be given fresh, so that it is no use buying a large supply at this time of year with the idea of making it last a week or more. I much prefer cooked lean meat or lights to green bone for young stock, as the latter frequently causes scouring.

Another important point is to separate the sexes as soon as possible after the birds have been weaned. Cockerels of some of the more precocious breeds, when little more than three months old, begin to make themselves a nuisance, and if they are left until they are a little older three or four young cocks will worry the life out of a flock of pullets, and do a great deal of harm in checking their growth. It is easy to distinguish the sexes at an early age in these precocious breeds, so the work of separation should be done without delay.

Those who have a few early chickens that can be utilised for the table should remember that there is no time like the present for marketing plump young birds. Some amateurs do not like the idea of killing chickens little more than three months old, but they must remember that by keeping their birds for another couple of months, when there will be a comparative glut in the market, they will probably realise less money. Make hay while the sun shines, and sell your chickens whilst prices are high.

## FIFTY YEARS AGO.

(Extracts from the "Newcastle Chronicle.")

MARCH 24th, 1864.

## A REPRODUCTION.

With to-day's issue of the "Newcastle Daily Chronicle" is given a reproduction of the first number of the "Newcastle Chronicle," March 24th, 1764.

Following is a copy of one of the advertisements:—

### TO BE FOUGHT FOR

At Mr. William Mole's Pit, at the Fighting Cocks, in the Bigg Market, Newcastle, on Monday, the 30th April, 1764.

FIFTY POUNDS, by Stags and Blenkards, not to exceed 4lb. 2oz.

On Tuesday, FIFTY POUNDS, by cocks, 4lb. 4oz. And on Wednesday, Twenty Pounds, by Cocks, Blenkards, and Stags, 4lb. 3oz.

The Cocks to allow as usual.

To weigh the Saturday before, between the hours of ten and two, and fight as usual.



## THE POULTRY-YARD IN MAY AND JUNE.

By F. W. PARTON, (The University, Leeds).

THE care of chickens during the very early stages of their growth, their general management in the spring of the year, and the methods of treatment of the stock birds during the time of breeding are subjects upon which much valuable information from time to time is given. There is, of course, no doubt that these are of vital importance, and their neglect may ruin, or at least minimise, success. With the approach of summer it is very often thought that the time has passed when special attention is necessary. This is, however, a mistake, for vigilance should not be relaxed with the coming of warmer weather; as a matter of fact, it is a very critical period in a chicken's life, and special treatment is required. Up to this time they have been growing apace, and their general appearance would suggest that all cause for anxiety is past. But there comes a time when they appear to be absolutely standing still, and much of their activity has departed. The reason for this is that they are growing their adult plumage, and a special course of feeding is necessary for the formation of feather. Another factor to be considered is that the land has lost much of its freshness, and they are fagging with fatigue from the hot weather. Any one of these adversities is sufficient to account for their lassitude, so that it can be readily imagined that the combination has a drastic effect. Each factor here mentioned can, however, be easily combated by a little knowledge of what is required and a judicious management in applying it. Food that has fulfilled all the necessary functions up to the present time should now be of a different nature. While for the growth of the body from early chickenhood the food should be nitrogenous, since this is the chief element needed for their growth, now that their mature plumage is forming it should be excessively high in albuminoid value, as the food has not only to maintain the chicken's growth, but must also give nutriment for the formation of new feathers. The functions the food has to perform are to encourage and maintain growth of the body, assist in feather formation, and to repair the waste of tissue in the chicken's body which is constant in chick and adult alike. For the completion of this work, of all other elements nitrogen is by far the most important.

Oats, as a well-balanced food—that is, balanced in the chief constituents—is doubtless one of the best, since it contains what is mostly required for chickens, and if oats be fed to them from as early an age as they can partake of this grain, they will grow a larger frame than will be produced with any other food. A good plump, short sample should, however, be used, otherwise it is far from an economical food, since the husk is so plentiful that after the birds are satisfied apparently, as much food remains as before the birds started feeding. Wheat, buckwheat, and a certain proportion of

animal matter should comprise their staple diet. With regard to the latter, circumstances must govern this matter, and each individual poultry-keeper must judge for himself, after regard being had to existing conditions, what quantity to use. In the early summer, fowls that are so fortunately placed that they have a farm over which to wander will obtain all the animal food that they require from the land, whereas those birds that are kept in confinement are deprived of this most valuable addition to their dietary. A substitute must be found. Table-scrap, or any form of meat, if properly cooked and given in small quantities, will be of the utmost value. This, together with an ample supply of vegetables, either raw or cooked, and mixed in their soft food of barley meal and middlings, will be found to considerably expedite feathering without neglecting the other functions for which the food is responsible.

In speaking about the importance of judiciously feeding animal food to fowls in summer, it must be made clear that this only applies to the growing birds. The adult fowls, now that their services are no longer required for breeding, should not be supplied with this form of food. It is extremely valuable for them when their eggs are required for incubation, as it assists fertility; but from, say, April, up to the time of moulting, it is quite unnecessary; in fact, it is injurious, being of too stimulating a nature, except when feeding is for some specific purpose.

A very important item in the management of the poultry-yard in summer is that the chickens shall have as much change of land as the conditions will allow; great benefit will accrue from so doing. It will act as an invigorating tonic and prevent that fagging which is so common among chickens, especially where large numbers are reared.

Chickens must not be cramped as to sleeping accommodation, or, however favourable may be the land over which they run during the daytime, it will be neutralised by breathing impure air at night. The danger of overcrowding may be very largely obviated by early separation of the sexes, and this should not be a difficult matter at the present time, since, even with Langshans and similar breeds, the difference between cockerels and pullets can readily be distinguished. Each of the sexes should be located at sufficiently distant parts of the farm to prevent their mixing. This, together with the exclusion of the wasters from the flock—culling should be rigidly and systematically carried out—will go far to provide the necessary space, which is such an important factor in allowing freedom and liberty of action, and for the full exercise of the natural faculties so essential in the young of all animals.

The importance of shade during summer must not be overlooked, the lack of which will cause a large amount of trouble. Where trees or bushes or any sort of permanent shelter is available, the chickens are not slow to take advantage of it. Where, however, this does not form part of their rearing ground, by a little dexterous management



shelter may easily be improvised—canvas, straw plaited into hurdles, an upturned crate covered with sacking; in fact, there is no limit to what may be employed for the purpose.

The breeding pens should be broken up immediately all the eggs have been secured that are required for hatching. The removal of the males will be a relief to the hens, whose condition, after a heavy season's laying, is somewhat run down. He will also benefit by the separation, and when he is intended to be used again next year for the breeding-pen his vigour will be much greater for the enforced rest. A separate place need not necessarily be provided for the cocks on their removal from the breeding-pens, and if an old male bird be put with each batch of young cockerels they will usually, after the first few days, agree quite well together. They are thus readily disposed of. On the general run of farms it is as well to keep one breeding-pen intact, so that when hens

come on broody in the warm weather fertile eggs may be had for them. The chickens so hatched will be useless, so far as laying this winter is concerned; but if of any other than the non-sitting breeds they will render a great service on the table late in the autumn and during the winter. Speaking generally, it will be a very much more economical plan than allowing the hens to remain broody without utilising the period to better advantage than attempting to break them off. This latter may be accomplished, but frequently it is only temporary, and they again soon show the desire to sit. In addition to this, the rest from laying obtained by the hen when sitting on the eggs and when brooding the chickens is of considerable assistance in securing a supply of eggs about the time when they are becoming scarce. It is a well-known fact that hens cannot be always laying, and when their "time off" can be profitably employed it is advisable to take advantage of it.

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## THE SMALLHOLDER'S FIRST YEAR.

### CHAPTER V.

#### PERMANENT AND PORTABLE HOUSES AND RUNS.

ALTHOUGH poultry should form one of the principal crops on a smallholding, still it must be remembered that the cultivation of the ground is an essential factor in the working of such a farm. The successful man realises the proportion that the various crops should take on the farm, for this is really one of the most important points to be worked out in connection with a holding.

We believe that only one fourth of the ground should be devoted to fowls, since birds tend to overcharge the land with manure—that is plant food. An opportunity must be afforded to the ground to make use of the supply of plant food, otherwise the land will become fowl sick within a very short space of time.

In our opinion three times as much land as is required for the birds should be used, the fowls only returning to the same ground every four years. The manure deposited during the twelve months of occupancy will be in such quantity as will add considerably to the weight of the crop for some years to come.

Under such a system—unless market gardening formed a part of the operations—it is found best to take roots off the land the first year, this being followed by wheat in the second and clover in the third. By adopting some such method the land is in first rate condition for the fowls in the fourth year.

An explanation of this kind is necessary when dealing with the question of housing, for if the

plant has to be removed every twelve months, it is necessary to consider the question of ease in removing the house and runs on to fresh ground. If a lot of wire netting is used this is a costly and laborious business, and, hence, should be avoided whenever possible.

There are three ways in which the fowls can be kept on a smallholding, and these we must mention. In the first place the birds can be kept on the intensive system; in the second on the semi-intensive method—that is, penning them in yards; and in the third place on the American colony system. We make no reference to the method of keeping birds at liberty, for this is hardly practicable under smallholding conditions.

The intensive system may be successful, but so far it has not been proved, and therefore, we do not propose to advocate this method. We do not say for one moment that it cannot be done, but as yet it has not been proved to be successful, hence we do not wish to advise our readers to carry out something that is only an idea.

The semi-intensive method is expensive. The cost of wire netting is heavy, and if this has to be moved every year the damage done is extensive and the money that will have to be paid for renewals is too great. To have permanent houses and runs means that too much ground will have to be devoted to the fowls. Rent is an important consideration, and, moreover, the greater part of the manure will be wasted if the birds are kept on the same ground year after year. By changing the land every particle of the manure is utilised, and since this works out at about £5 5s. for every hundred birds per annum, it is worth taking into consideration.



The American colony system is frequently described wrongly. The real method is that meant by the keeping of a large number of birds on a given area for twelve months, then removing the whole pen to other ground. Putting it into figures it is customary to run one hundred fowls to the acre and to enclose the space necessary with wire netting. On a smallholding, if two hundred birds were to be kept as layers an area of two acres would be enclosed—and it is cheaper to take this land in the form of a square—and the necessary housing accommodation would be provided.

To enclose an acre of ground about 280 yards of wire netting are required, but for two acres only an additional 112 yards are needed. This makes a big difference, and it is a point that should always be borne in mind.

No matter what system of keeping poultry is adopted there is no doubt that the scratching shed method of housing is the best. It is difficult under certain circumstances, especially when keeping birds at liberty, to use such a form of house, but it is possible.

Some of the appliance makers to which we shall have to make reference in the next article supply this type of house, but we shall have to leave a discussion of this point until the next issue.

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#### Specialist Club Year Books Received.

The White Wyandotte Club year book for 1914 is a well got up little booklet of upwards of 60 pages. In addition to the standard for the variety and the scale of points for judging, there are some

interesting articles. The illustrations of a number of winning birds enhance the value of the volume.

The Partridge Wyandotte year book gives a report of work accomplished with reference to this breed and proves interesting reading. Price 3d. to non-members from Mr. H. Gunn, Castle Villa, Sandhurst Road, Gloucester.

For the fifth year the "Red" Breeders' Annual (being the year book of the British Rhode Island Red Club) has made its appearance. Its 140 pages contain a great amount of valuable information, the many illustrations adding considerably to its interest. The past year has been a successful one for the club and its members.

The Campine Club has had another successful year and the story is told in the year book for 1914. A copy of this should be obtained by all advocates of this breed. Price 3d. to non-members from Rev. E. Lewis Jones, Heyope Rectory, Knighton, Radnorshire.

The Sussex Poultry Club year book for 1914 has reached our office. In addition to the usual features the coloured plate showing standard types of the brown, light, speckled and red Sussex should prove of great use to all breeders. The book is sold to non-members at 6d. and can be obtained from the Secretary, Mr. S. C. Sharpe, Meadham, Lewes.

The La Bresse Club (England) year book for 1914 is a well printed, well illustrated brochure, containing much of interest to breeders of this well-known French breed. Price 6d. to non-members of Mr. G. H. Caple, Manor Farm, Stanton Prior, Nr. Bristol.



Well-arranged Breeding Pens.

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## THE POPULARITY OF BREEDS.

BY A FANCIER.

IF the estimate of a breed's usefulness may be measured by its popularity in the show pen, there are many varieties to-day which must be shelved by the ambitious poultry-keeper as wanting in those qualities which go to ensure success. But it may be urged, and perhaps rightly so in some instances, that the economic value of a breed is not determined by fanciers and show promoters, and that the latter, as a class, have done more harm than good to our poultry from a utilitarian's point of view. The fact, nevertheless, remains that the most popular breed of any given period is invariably that which the Fancy has adopted, and, whatever the arguments brought against the promotion of exhibition stock by the utility poultry-keepers may amount to, it is common knowledge that a breed, when once it has gone out of popular favour as a fancy fowl, rapidly diminishes in numbers—and often in quality—towards extinction. It is just the same in the realm of horticulture or agriculture. Remove the influence often sneeringly referred to as "the Fancy," and deterioration sets in. There is a marked retrogression to some earlier type.

There are some notable exceptions to this, I am aware, in the persons of breeders who have made the perfecting of one variety of fowl, from a laying or other economic standpoint, a life study without ever winning a prize or attempting to do so in a fancy show. But these *are* the exceptions, and there is not one poultry-keeper in a hundred who can afford to isolate himself from the fashion of the day—not one in a hundred who has the ability, capital, and personality to run contrary to the times. The slur that utility breeders often cast upon fanciers—viz., that the latter are running their breeds of poultry—is not substantiated by facts, for we notice that in the laying competitions it is the popular fancy breeds which are not only numerically the strongest, but which win the prizes as the best layers. Sometimes these highly-developed egg-producers are not directly the product of a fancier's yards, but they came originally from them.

It is the fancier who has given us the Orpingtons and the Wyandottes in all their multifarious varieties, and it is the fancier who has saved many a useful breed from extinction. He knows quite well that it is not much use bringing out a breed these days unless it has some economic property to support it. The utility poultry-keepers of the country are, indirectly, the fancier's best customers, since they buy that enormous percentage of young birds which are not good enough, from a Fancy standpoint, to keep and yet are too good to kill. Nine-tenths of our small poultry-keepers—and they form a very large body in themselves—who keep one or two breeds both for a hobby and for utility purposes get their stock direct from the large

breeders and exhibitors. They choose, if they are wise, a popular variety if they want to indulge in a little showing and sell a few sittings of eggs, and I do not think they are generally disappointed if they go to breeders of repute and pay a fair price.

That line of demarcation which is supposed to exist between Fancy and utility stock is not nearly so evident as it used to be, even in the eyes of prejudiced persons. For, strong as the Fancy is, it could not flourish as it does if it were not for the commercial side of the industry, and as I have shown, it is always the most vigorous when it is infused with a strong blend of utility features. The reader must not imagine that I hold a brief on behalf of the Fancy. Rather I would endeavour to point out that it is not so black as it is painted by some people, and that the most promising condition of affairs is that in which both the Fancy and utility poultry-keeping are infused one with the other.

The fancier for example, has been accused of ruining the Minorca by excessive breeding for head points; and while I fully admit it to be true regarding some strains, the Minorca, on the whole, is now suffering from a passing phase of unpopularity which is neither its own nor anybody's fault. Breeds rise and fall in public favour, often through no apparent reason, or a new variety is brought out, and very naturally, if it has good qualities, everybody rushes for it, just as they do for a new kind of potato or the most recently introduced tomato. Thus the black Leghorn has very largely superseded the old white variety; the Partridge and black Wyandottes have almost swamped their predecessors; the buff Orpington has far outstripped the earlier black variety in the race for popularity.

The Plymouth Rock was at one time a greater favourite with exhibitors than it is to-day, though it still has many doughty champions. At the same period it enjoyed a more universal favour with utilitarians than it now does, and the poor fancier has here, once more, been accused of spoilation. But I do not believe the Plymouth Rock is a worse layer to-day than it was, nor a worse table-fowl. In fact, it is probably a good deal better; only there are some breeds, of later introduction, which are better still, and it is on that account that we may often unjustly accuse the Plymouth Rock of deterioration. Furthermore, we must ever remember that, numerically, the Plymouth Rock is to-day hopelessly inferior to, say, the white Wyandotte. There is, perhaps, only one strain of the former to twenty of the latter. Is it not easy to understand, therefore, that, were the Plymouth Rock as numerous as the Wyandotte, it might yield out of its multitudes some "record layers"? The one has been given a chance; the other has not.

We can, with perfect justice, look upon the Plymouth Rock, the Minorca, or any other fowl which has once proved its worth as a latent possi-





[Copyright.]

**A Trio of Buff Orpingtons.**



bility full of promise for the speculating breeder. Do not those utility poultry-keepers who have "specialised" in Minorcas (or any other comparatively unpopular show breed) during the past ten years or so, irrespective of whether their favourites filled the classes at shows or not, prove the truth of my assertion? The example set by these people is a most worthy one, which more commercial poultry-keepers might study. Rather than cry out

against the fancier for the alleged spoilation of breeds, why does not the utilitarian more frequently get strains of his own and stick to them? If the fancier desires to exercise his scientific skill in the production of "feathers" and "points" he has every right to do so. The utilitarian has his remedy. Why does he not show his independence instead of complaining like a child over a broken toy?

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## FEEDING POULTRY.

By W. M. E.

THERE can be no doubt that feeding poultry is an art, and one to which everyone who keeps fowls may profitably devote himself. It is not so much the material that matters, but how it is given and in what quantity, and it is an unfortunate fact that a great many people fail to realise the importance of the matter, and regard a hen as a mere machine, apparently supposing that the more food they cram into her the more eggs she will lay. The amateur's fowls are kept in such a way that they are more likely to suffer from the effect of careless feeding than those which enjoy a free range upon a farm. The latter get plenty of natural exercise, so that if they happen to be fed a little too generously it amounts to nothing worse than a mere waste of food. But with the amateur's fowls, kept, as a rule, in close confinement, there is a far more serious effect, for a hen that is fed too generously has no incentive to work by scratching for something more. If she can satisfy her appetite by eating what is thrown down to her or placed in a trough, she will have nothing more to do during the remainder of the day but to stand idle, and that inevitably leads to internal fattening, which is the cause of many laying failures. Even the most active hen may give way to idleness if fed in such a manner as to discourage exercise, and it is only necessary to examine a very fat hen after death to realise how the heavy coatings of fat interfere with the activity of the productive organs. This also generally leads to liver complaint, and when one's fowls get to that stage the cheapest plan is to wring their necks and write off the loss as a bad debt that can never be recovered. But what puzzles the beginner is how to feed without making mistakes. It is impossible to adopt hard-and-fast rules to govern quantities, since some birds require more than others, and various conditions have to be taken into consideration, so that the matter must be left entirely to the judgement of the poultry-keeper. We have all at various times experienced the difficulty of gauging the correct amount of food to give our fowls in order to produce the best results, and it is only by carefully watching the effect of what we give that we can form an opinion as to what suits them best.

### FEEDING IN CONFINED RUNS.

Some little time ago a poultry-keeper appealed to us for advice about the feeding of his fowls. He gave his birds three meals a day, finding that, although they were always ready for the next meal, it was impossible to get them to take scratching exercise in the intervals. The reason was obvious. The first meal consisted of household scraps, fed in a pan; the second of greenstuff, with more scraps, fed in the same way; and the third of hard corn thrown down among the litter. The fowls had a generous meal each time, and they could afford to wait comfortably until the next, especially as there was nothing whatever to encourage them to scratch, for, after all, there must be some strong incentive to induce birds to take exercise of this kind. We advised this person in the first place to give considerably less at each feed: to give four meals instead of three; and, finally, to throw down a little hard corn after the soft stuff to encourage scratching.

The principle of giving four meals, or even more, in the day may not appeal to those amateurs who can only attend to their fowls in the morning and evening, but it possesses so many advantages that we recommend its adoption by all who keep laying hens in small runs entirely for egg-production and are prepared to take reasonable care in feeding. If the latter proviso were not observed the four meals a day would be more disastrous than ever, for the principle consists of giving four (or more) small meals per diem instead of two or three larger ones, and the reason is that, although the birds may not actually get any more food in the day, they have more encouragement to take exercise. For instance, supposing we feed our fowls twice a day. We throw down some corn at each meal, which will keep the hens scratching for an hour or two, or so long as there is anything to be found. Then they will stop, and, with the exception, perhaps, of an occasional desultory scratch to see if anything remains, the rest of the day will be passed in comparative idleness, which means that the birds become chilled in winter and become fat and inactive at all times. Then let us try the plan



of feeding four times a day, and note the difference. We give proportionately less, of course, at each meal, but provide something for the birds to scratch for, the effect of which lasts very nearly until the next meal comes round, when they will again be set scratching, and the net result is that the fowls have four or five hours' more exercise during the day, and little, if any, more food. To carry out this principal it is necessary to combine soft food and hard corn, which is, perhaps, the best plan in other respects for fowls kept in confinement. The soft food is stimulating, and if little is given at first a few grains of hard corn may be thrown down among the litter to complete the meal and to provide an incentive for scratching exercise.

#### HOUSEHOLD SCRAPS.

Small poultry-keepers have been advised that by utilising household scraps they can keep their fowls in productiveness at a very small cost. This is



**Waiting to be Fed.**

[Copyright, 1914.]

very true, provided the scraps are given in a proper manner, but it does not mean that birds should be kept upon this kind of food alone. The scraps are stimulating besides being economical, but they give the best result when used to help out corn and other purchased foods. The most suitable scraps to give to poultry are waste pieces of bread, cooked potatoes and other vegetables, pastry, cakes, &c. Scraps of meat should be put on one side to be given separately, and potato parings and other uncooked roots should be boiled if they are to be used. The best plan is to have a stock-pot in which to keep all scraps that come from the house, and if hot water is poured over them in the evening and they are allowed to soak all night the liquid may be strained off in the morning and the mass mixed with sharps or barley-meal into a fairly dry, crumbly consistency. This may be given, as we have already said, for the beginning of the meals, and if there is sufficient a little may

be given for each feed during the day, provided the birds have plenty of hard corn as well. Scraps of meat should be cut up into small pieces and given separately, whilst bones with a little meat upon them may be put into the run for the birds to peck at. Fresh green food must also be given separately, as the cooked vegetables are not sufficient, and for winter use, when greenstuff is scarce, there is no better substitute than swede turnips, which should be split in two and hung up within reach of the birds, as they would soon be covered up and fouled if thrown upon the floor of a scratching-shed.

#### SOFT FOODS.

It naturally follows that those who keep a larger number of fowls find their household scraps do not go so far, so that the cost of feeding per head is higher. In such cases it will be necessary to give soft food in another form. There are many excellent specialties on the market, such as biscuit-meal and cooked cereal food, any of which, if scalded and mixed with barley-meal or sharps, makes an excellent feed by itself or together with household scraps. Pea-meal is also useful for mixing with wet food, and is better for laying hens than Sussex ground oats, though the latter is undoubtedly the best ground food for rearing young stock and for feeding table-birds. Barley-meal or other meals by themselves are not so serviceable as when used in conjunction with some scalded cooked food, as we have described.

#### HARD CORN.

In selecting hard corn we must be guided by the conditions under which the fowls are kept, the season of the year, and the price, for at the time of writing the value of foodstuffs stands at such a high figure that the most useful cereal of all—wheat—is too expensive for the ordinary poultry-keeper. A good sample of wheat costs about 6s. a bushel, and at that price even its valuable qualities do not entitle it to a place in the bill of fare of the economic poultry-feeder. Smaller wheat, the majority plump but of inferior quality for milling, may be purchased at 1s. a bushel cheaper, but even at that price we think the poultry-keeper might find better grains that do not cost so much money. Many fall back upon what is popularly known as "poultry corn," a concoction that is put together not so much with regard to the welfare of the hens that are to eat it as to provide a substantial profit for the dealers who retail it. "Poultry corn" generally contains a large proportion of maize, which for some reason is believed by many corn merchants to be the ideal grain for poultry under all conditions. Then there is a little light wheat, some light oats, and inferior barley, a small quantity of dari, besides a sprinkling of rubbish of no particular variety. This mixture is sold cheap—or, at any rate, cheap in comparison with better-class food—and the amateur who uses it fondly imagines that he is economising with his feeding. But he is labouring under a



mistake, for such mixtures have little feeding value, and they are put together without regard to the characteristics of the various grains.

#### PROPERTIES OF FOODS.

The poultry-keeper should know something of the relative feeding value of certain cereals as well as their suitability for various purposes. Maize, the most popular poultry grain with many unsophisticated poultry-keepers, is decidedly useful in its place, but is not of a suitable character to give to fowls in a small run. For farm poultry in winter it has no superior, and possibly, during cold weather, a little may be mixed with other grains for birds in somewhat exposed, confined pens; but the back-yarder can have little use for maize, which is of too oily and heating a character for the conditions under which his fowls are kept. Barley is another grain that small poultry-keepers can dispense with on account of its heating nature, although in very cold weather a proportion of not more than half may be given with other grains for a change. Oats in the absence of wheat, make the most useful staple grain for the small poultry-keeper, but so many light samples are sold that buyers should stipulate for a good plump white oat and see that they get it. In many places oats can be purchased with the ends clipped off, and these, though more expensive, are naturally of greater feeding value. Dari is useful for a change, and so are white Canadian peas, the latter and buckwheat being specially useful in winter. It is highly desirable to give the birds a change of food, for when kept upon one grain entirely they become somewhat stale. The household scraps certainly provide some variety, but if a few changes are made among wheat (if cheap enough), oats, dari, buckwheat, and peas the birds will appreciate them.

#### MINOR NECESSITIES.

There are several necessities for poultry that must be included under this heading. Grit is one of the most important, and its function is to assist in grinding the food in the gizzard. If the gizzard of a dead fowl is examined it will be found to contain numerous small stones, many worn smooth, that have assisted in the process of digestion, and these smooth stones may often be found in the excrement, as they pass through the system when their function is performed. Fowls running at liberty will make frequent excursions to a road or path where small stones are to be found, and it is therefore obvious that birds kept in close confinement must have a regular supply of this necessary commodity close at hand. Flint makes the best grit, as it is invariably sharp, and though stones may be broken up into small pieces by those who can obtain a supply of flint, the finished article can be bought so cheaply (from 2s. 6d. to 5s. per cwt.) that no poultry-keeper should be without a quantity of grit, and every small run should contain a boxful, so that the hens may use it as required. Lime is also necessary to provide material for the

formation of egg-shells, and it is usually given in the form of oyster-shells, crushed and broken into small pieces, which may also be purchased very cheaply. Broken crockery, mortar, and any material containing a large proportion of lime serves the same purpose, and if hens in close confinement are kept without this calcareous matter, it is inevitable that shell-less and thin-shelled eggs must result, for fresh supplies of lime are needed to meet the demand entailed by constant egg-production.

#### GREEN FOOD.

An important item for fowls kept in close confinement is that generally known as green food, which comprises uncooked vegetables, roots, or even grass. When one has a garden a supply of cabbage or lettuce leaves sufficient to last a small flock of birds all the year round, can generally be obtained, and some keen poultry-keepers sow a small patch of rye to be cut for the fowls in the early spring, when there is very little green food of other kinds. In summer it is a comparatively simple manner to obtain an ample quantity of greenstuff, for if everything fails some young grass can be gathered for the purpose, and we know some people who give their fowls the lawn mowings. But in winter there is often a real difficulty, and the best plan when nothing else is obtainable is to use swede turnips. Mangolds, we find, are more likely to cause scouring, but swedes possess some feeding value, as well as the necessary vegetable matter, and all that one has to do is to cut them in two and hang them on the wire netting within reach of the birds, when they will peck out the inside and leave the skin like a shell. If put upon the ground the roots are liable to be trodden about in the dirt. Cabbage leaves and other greenstuff should be hung up in the same way, though if one possesses a food chopper it may be put through the machine and given to the fowls either separately or with the soft food. It is not necessary to give a great quantity, though in summer old birds may be given more greenstuff and less corn; but the fowls should have a small amount every day. Birds that run at liberty or in large grass enclosures will find greenstuff for themselves, though in the latter case it must be remembered that during the winter, and also in a very dry, hot summer, there is no young growing grass obtainable, so that something should be given to supply the deficiency.

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#### Belgian and English Campines.

In a review of the Campine Club Year Book, *Chasse et Pêche*, with reference to the illustrations showing the idealised English Campine, says: "These are magnificent birds, on perfect lines, but in which one of our old Flemish or Campine breeders would not recognise his good "layer to death" (doodlegger). The body is longer, more elegant if you will, but has no more the laying type so characteristic of the Braekel-Campine and its cousin germaine, the Brabançonne.



## TUBERCULOSIS IN FARM POULTRY.

BY W. W. DIMOCK.

**T**UBERCULOSIS is to some extent prevalent here and there among the poultry flocks of Iowa. That has been brought out in the examination of birds, or their tissues, brought or sent for diagnosis to the veterinary laboratory of the Iowa Agricultural Experiment Station. From November 1, 1909, to June 30, 1912, the laboratory examined the tissues

caused by a bacterium known as the bacillus tuberculosis. It shows itself in poultry by the development of yellowish-white nodules. These are found principally in the liver, spleen, kidneys, mesentary and wall of the intestines, although lesions may appear in other parts, joints, skin, etc. Small inflammatory nodules, somewhat resembling tuberculosis, may be caused by other forms of bacteria,



A Houdan Pullet.

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of seventy-three birds, two of which, or 2.7%, were found to be affected with tuberculosis. From July 1, 1912, to June 17, 1913, sixty-nine birds were examined and it was found that in 18, or 26%, tuberculosis was the cause of sickness or death. These birds or tissues came from many different flocks in various parts of the state.

Tuberculosis is a specific infectious disease

animal parasites or lifeless irritating substances, but the true tubercle is caused only by the bacillus of tuberculosis; unless the particular organisms can be found, the disease should not be classed as tuberculosis.

The bacterium which causes tuberculosis in poultry (bacillus tuberculosis avium) is a small,



slender rod, slightly curved, with round ends and, according to the author's observations, shows a marked beaded appearance, especially in stained smears from diseased tissue. While this is the specific cause of tuberculosis in fowls, there are many predisposing factors that often have a very important bearing on the spread and course of the disease. Among the causes which encourage the disease but which may be controlled are overcrowding, bad ventilation, confinement in damp houses, exposure to cold and storms, general unhygienic surroundings and spoiled foods. Infection of healthy fowls probably takes place most often from contaminated food, water and air, by which means the organisms gain entrance to the alimentary tract and respiratory passages.

#### SYMPTOMS.

Many of the birds examined were dead before they reached the laboratory. Close observations were made, however, in the case of eleven living birds which ultimately died, or were killed, and found to be tuberculosis. The symptoms here given as more or less typical of the disease are largely based on these observations.

The symptoms which a bird presents depend somewhat upon the location and seat of the disease. When the internal organs are the parts particularly involved, there is a loss of flesh that comes on gradually, leading to marked thinness and a paleness of the comb, the wattles and the visible mucous membranes. There is the general appearance of anaemia or weakness, and an examination of the blood will show a reduction in the number of red blood corpuscles. As the disease progresses, the feathers become ruffled, the bird separates itself from the flock and diarrhoea sets in, producing weakness even to the point of prostration. At first the appetite is good, but later the birds refuse to eat.

When the disease involves the joints, there is swelling and lameness. These swollen areas around the joints may rupture and discharge a thick, yellowish material that contains many organisms. The wings when involved drop low and often drag on the ground when the bird walks. Such cases are not uncommon in pigeons, wings dragging, joints swollen, many of them rupturing, and infected material constantly discharging from the ulcerous surface. The first noticeable symptoms in such cases will be the inability to fly.

If the lungs and air passages are involved there is usually difficult breathing which is brought to the attention of the owner or attendant by a wheezing or rattling sound. In such case there is usually a discharge of a thin, slightly stained material from the nose and mouth.

If the lesions are located on the skin, they are usually in the form of round, elevated nodules covered with a thick, horny growth. If these rupture they appear much the same as the ruptured areas around the joints. About the mouth, eyes,

nasal passages and cavities of the head the disease takes on various forms and may easily be confused with or mistaken for roup. The temperature usually remains about normal.

#### ANATOMICAL CHANGES.

The changes found in the tissues of birds dead from tuberculosis are the most part small, yellowish nodules or tubercles. The liver is the organ most frequently involved. The nodules vary from very small ones just visible to the naked eye to those of the size of a large yea. They are usually separate, although in rare cases two or three may be united, forming irregular areas. The nodules in the liver are made up of a soft, semi-solid or cheesy dead, or necrotic, centre surrounded by a dense connective tissue capsule. This capsule is composed of newly formed tissue, and is produced in a protective way in that it tends to hold the tuberculosis organisms in a confined space and prevents, in a large measure, their spread to other parts. The nodules are easily separated from the surrounding tissue, a condition which distinguishes them from other diseased areas having a similar appearance, but a different cause. The liver is usually enlarged. Its capsule may rupture, followed by hemorrhage into the peritoneal cavity, causing sudden death.

The lesions in the spleen and kidney resemble very closely those of the liver.

In the mesentary, the membranes which connect the intestines with the back wall of the abdomen, the diseased areas vary from acute inflammatory nodules of a fresh colour to those that have a narcotic centre, surrounded by a capsule of connective tissue. The centre may be semi-fluid, cheesy or hardened in character. The older lesions are of a decided yellowish colour and usually hardened or calcified. The nodules are usually more numerous in that part of the mesentery next to the intestine.

In the intestine the early development of the nodules seems to be just beneath the outer covering, at which time they are very small. As they develop the capsule becomes thick and the necrotic content is comparatively small in amount. There is a tendency for an opening to form leading into the passage way of the intestines through which material from the nodules may be discharged. These nodules may occur throughout the length of the intestines.

The lesions on the skin vary from small to large nodules that generally grow outward, seldom involving to any extent the underlying structures. These skin lesions are usually free from feathers and have a thick, horny surface.

In the large, older nodules there are very likely to be found a number of necrotic centres separated by dense bands of connective tissue. If these nodules rupture, as they often do, there is thrown off a sticky, yellowish material, that contains many organisms.



Among the fowls examined in the veterinary laboratories, the lungs were seldom affected. When they are involved it is usually with the formation of the characteristic nodules. In one large flock the only recognisable lesion found was in the trachea; this consisted of a discharge into the trachea. The material was rather firmly attached to the lining membrane, was fibrous in character, of a reddish colour and showed upon microscopic examination an innumerable number of the bacilli. For a short distance over the involved area the rings of the trachea were, in every instance, of a light colour, dry and very brittle. Other parts of the trachea and the lungs were usually red and congested. In all of the birds so affected there was a discharge from the nose and mouth.

yard, scratching pens, houses, roosts, and nests, and can easily find their way into the food and water or receptacles used for feeding and watering. From these they may readily gain entrance to the intestinal canal, from which, under favourable circumstances, they pass into the circulation and are carried to the various organs of the body. The organisms may gain entrance to the respiratory system. This is especially possible when the birds are closely confined in houses that are dusty.

On a squab farm started in 1905 with mostly young birds the disease soon began to appear in isolated cases. Recently, the plant was carrying 12,000 breeders and the loss will probably aggregate 1,000 birds a year from tuberculosis alone, the greatest number of cases occurring in the old birds



**A View at the Annual Show of the Poltava Poultry Association, Russia.**

*[Copyright.]*

Tuberculosis in the cavities of the head causes bulging of the affected part.

In the joints, aside from the enlargements and possible discharge, there may be found on the membrane that lines the joint cavity the development of a rather delicate fibrous exudate. Later, the joint cavity may become filled with a cheesy, tubercular material. The lining membrane breaks down, the joint surfaces become rough and the destroyed elements are loose in the joint cavity.

Other organs that are less frequently involved are the ovaries, the heart and its membranes and the bones, in fact no organ is exempt.

#### MODE OF INFECTION.

Birds suffering with tuberculosis may discharge the bacilli with their droppings, from open lesions, on the skin, or from the nose and mouth. Coming from these parts the organisms are scattered in the

and in the old habitations. In a flock of about 500 hens there was for several years a gradually increasing loss of birds, supposedly from roup, totalling during the last year 15% of the flock. A careful investigation demonstrated that tuberculosis, not roup, was the cause of death.

While the most common source of infection is from sick to healthy fowls, either directly or indirectly, experimental evidence shows that there is a possibility that fowls may become infected with tuberculosis from following cattle and hogs that are suffering with the disease and discharging the bacilli with the faeces; from eating the sputum of tuberculous people, milk that contains the organisms, or the carcasses of animals that have died of tuberculosis and which are so often fed to other farm animals.

Experiments have shown that it is possible for the bacilli to be transmitted through the egg to



the young chick. This, however, is not common and probably takes place only when a lesion exists in the ovary or possibly when the individual is suffering with advanced generalized tuberculosis. Chicks hatched from infected eggs never reach maturity, usually dying within the first three months. Muffucci, Mohler and Washburn, Lichtenstim and Robinswitsch.

#### PREVENTION.

As the administration of medicines will not give results and is therefore useless, all efforts should be to prevent the introduction of the disease into healthy flocks and to check its spread in flocks where it already exists. If flocks are known to be free from tuberculosis they should be kept from other farm animals that may be suffering with the disease and from eating the flesh of animals so affected. Birds or eggs for hatching should not be purchased from flocks that are not known to be free from tuberculosis.

After the disease is known to exist, the whole flock must be disposed of or the disease must be eradicated.

If the entire flock is to be killed, the carcasses of all the birds badly affected should be destroyed by burning. Those that are still in good flesh, although suffering from a mild or localised form of the disease, may be utilized for food.

To eradicate, some radical and persistent steps are necessary. All birds showing symptoms of tuberculosis should be killed and burned. New quarters and yards should be furnished if possible and the old houses burned and yards ploughed up and seeded. If the houses are permanent and valuable, then all loose fixtures should be removed and destroyed, the houses treated with a strong disinfectant and then whitewashed. All loose dirt in the houses and yards should be scraped off and treated with some antiseptic solution. Droppings from roosts should be removed daily and sprinkled with a 2% solution of sulphuric acid. All water and food should come from sources that are known to be free from contamination and the receptacles used for water should be cleaned daily. If it appears that there is a large number of birds affected it is advisable to purchase eggs for hatching from a sound flock. However, if the birds are valuable and it is especially desired to build up a flock from this stock, there would be little danger of transmission through the eggs.

The system of housing in small colonies greatly aids in the control of this as in any other infectious disease.

#### DIAGNOSIS.

The diagnosis of tuberculosis in poultry by observing the symptoms may be possible in some

typical cases. In a majority of cases, a diagnosis may be made from a study of the gross or visible part of the tissue changes found upon post mortem examination. A positive diagnosis rests with the finding of the bacillus tuberculosis avium in microscopic preparations made directly from the lesion in the organs or tissues of birds that were suffering with the disease.

Some of the diseases and tissue changes which must be distinguished from tuberculosis are chronic cases of chicken cholera where there is lameness. Birds are not uncommonly lame from joint rheumatism, exposure to cold, gout, and sore feet. In birds dead from cholera there are often yellowish white spots, and areas of degeneration on the liver. Areas of fatty degeneration, local areas of necrosis and abscess formation, which are due to various causes and which stand out as prominent discoloured spots, may by the inexperienced be mistaken for tuberculosis.

Tumours of the liver, which are usually of the lymphoma or sarcoma variety, may also be confused with tuberculosis. In some cases the development of the tumour is uniform throughout the substance of the liver, making the organ several times its normal size and giving it a mottled appearance. In other instances, tumours appear as yellowish white, firm, slightly elevated, circumscribed masses of newly formed tissue, usually larger than tubercular nodules.

Tuberculosis of the cavities of the head must be distinguished from chronic roup. Tumours of the skin, encysted parasites (*Laminosioptes cysticola*) that are so frequently found in the subcutaneous tissue of fowls, the disease known as "going light" or asthenia, paralysis in chickens and Heterakiasis are not to be confused with tuberculosis. In paralysis in chickens there would be the absence of the swelling about the joints. Heterakiasis is a disease characterized by extreme wasting of the muscles, caused by a round worm that lives in the caeca or blind gut. Birds harbouring the air sac mite (*Cytodites nudas*) and birds showing general unthriftiness may also in some cases be mistaken as tubercular.

When one stops to consider the seriousness of tuberculosis in farm animals, the possibility of its spread from one species to another, the indirect danger to humans, the great economic importance of having flocks and herds free from the disease and the possibility of mistaking other morbid conditions for those of tuberculosis, a positive diagnosis always seems advisable. This can be done by finding the bacillus tuberculosis avium in microscopic preparations made from the lesions, by animal inoculations and usually from a careful study of the gross and histological structure of the nodules.



## FRENCH FATTENING METHODS.

IN connection with all French rural observations it must be remembered that France is a country of small proprietors and small farmers, and that even where the land is rented farms are moderate in their extent. Throughout many of the departments a farm of fifty hectares (120 acres) is regarded as very large, and the more general size would be from ten to twenty hectares. This state of things has had great influence upon the agriculture of the country, for much more attention is given to the smaller products than prevails here. Business is conducted in a less wholesale fashion than we are accustomed to find in Britain, and there remains that old-time custom of producers coming into

tunities afforded them in this direction, and the realisation of the fact that newer and improved methods may be adopted with advantage, we shall see a vast change within a few years. The signs are evident to the discerning eye.

### FATTENING IN GENERAL.

Although the methods of fattening adopted in France vary considerably, yet as a rule one main idea appears to be prominent—namely, that the birds shall be kept warm, in semi-darkness, and be fed on flesh-forming foods. Other points are largely matters of detail, resolved by immediate circumstances. In some places one plan is followed, in another a different custom is adopted, but the great



**Outside Cages on a Sussex Fattening Establishment.**

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direct touch with customers which is only possible when markets are depended upon rather than dealers. And it must be conceded that, as far as poultry is concerned, Frenchwomen are wonderfully skilful, though in this respect there are some cleverer than others, as will be the case everywhere. These differences will always be found, and we have had offered butter as bad in France as is to be met with in not a few ordinary English farmhouses, and that is saying a good deal, though the average quality of production is decidedly higher than with us. But it must fairly be acknowledged that, as far as poultry is concerned, the general run of French farmers' wives are enormously in advance of those to be met with at home. We may hope, however, that with the spread of technical education throughout our rural districts, more especially if the younger folk avail themselves of the oppor-

fact to be made prominent is that the fattening of table-poultry is not confined to a few counties, but is distributed all over the country. Of course, certain departments have obtained a greater prominence in this respect than others, notably Normandy and the departments of Saône-et-Loire and Ain, but the fattening of table-poultry is spread over a much wider area than in our own land. We cannot visit any of the towns which are scattered through the departments of France without seeing the vast amount of produce brought into market by farmers and their wives. We have visited the market of Louhans (Saône-et-Loire) when there were upwards of one thousand people standing with produce of one kind or another. True, it was a special occasion, being about ten days prior to Christmas, and the market was consequently much larger than usual, upwards of 10,000 fowls being offered for



sale, but at ordinary periods the same state of things prevails to a proportionate extent.

#### NOT A SEPARATE INDUSTRY.

It has already been shown that fattening in this country is almost entirely a separate industry, the birds being reared by farmers and cottagers, and sold to higglers, who scour the countryside on behalf of the fatteners. To some extent the same plan is adopted in France, though it is by no means so universal. In the districts of La Bresse, La Flèche, and Le Mans, we have visited establishments where this system is followed, though in only one case on the same scale as carried out by Mr. Oliver at Heathfield, in Sussex, for he, during the season, markets 2,000 chickens per week. Frenchwomen, especially in the districts named above, and elsewhere to a lesser extent, understand the fattening of poultry, and our observations show that the finest specimens are produced by those who do not market more than 50 to 500 per annum, the entire work of hatching, rearing, fattening, killing, and shaping taking place on the same farm. When this is so they are taken dead into market and there sold, either to dealers or consumers, the former purchasing for the Paris and other great markets. It will be seen that where this plan is adopted the profits of middlemen are reduced to the minimum, and whatever benefits accrue from the fattening system are retained by the producer, who, almost without exception, grows the food he gives to the fowls from first to last. To do this, however, needs skill in fattening, and that must be conceded to farmers' wives in the poultry districts. For first-class capons and poulardes fifteen to twenty francs are easily obtained, and we have seen the higher figure paid both at Bourg (Ain) and Le Mans (La Sarthe).

#### IN THE BRESSE DISTRICT.

Whilst it may be true that some dealers lay themselves out for the production of the best specimens—and as an instance of this we have visited at Le Mans an establishment turning out about 2,500 per annum, some of which are sent as far as Russia, and all realise high prices, the British Consul there informing us that he could buy a really well-fatted bird for less than 25 francs—it is evident that the more moderate-priced fowls are largely produced in this way. Live birds are bought in the various markets in the district, some in lean condition, and are fed up for about three weeks in cages holding about half a dozen, not very dissimilar to those found in Sussex, but more generally are half-fatted, the final process only needing about a week. In the Bresse district we have inspected several of these places, at the largest of which are marketed from 2,000 to 4,000 per week, the greater number from October to February, all of which are sent to Nice, Mentone, and the Riviera. But, it must be noted, they do not attempt to cater for the higher branches of the trade, as the prices range from four

to eight francs per bird wholesale, according to size and quality. For live specimens prices vary from three to five francs, the rate being determined by the amount of flesh already carried. Of course, these figures would not apply to capons or poulardes, but it is seldom that either one or the other are offered for sale alive, but when it is the case they are generally of a secondary quality.

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#### CHICKEN FEEDING.

The following method of feeding chickens is quoted from *The Farmer & Stockbreeder*:

Best chicken food for first three weeks, about half soft-cooked food and half hard grain. For forty-eight hours give nothing but sand, or small grit and water. Third day give stale bread lightly soaked in sweet skim milk and squeezed fairly dry, also canary seed.

Fourth day, add puddings made as follows: Groats or pin-head oatmeal 3 parts, wheat 2 parts, rice 2 parts, linseed 1 part, buckwheat 1 part. Of this mixture 1 lb. to a quart of skim milk cooked in shallow tins for about one-and-a-half hours, will come out a fairly stiff pudding. This is turned out to cool and dried off to a crumbly state by rubbing in sharps or biscuit meal. On the fifth day they should commence on the stock dry chick feed, consisting of canary seed 3 parts, wheat 2 parts, groats 2 parts, rice 2 parts, cooked rolled breakfast oats 2 parts, hemp seed 1 part. About half of this mixture and half puddings. After three weeks the hard corn mixture is cheapened by adding more wheat and, later on, oats. By the sixth week they will do on 1 part stock feed, 1 part wheat, 1 part oats, and the puddings can be gradually withdrawn in favour of ordinary sharps and biscuit meal soft food. No meat should be used as long as milk is given, afterwards fish meal is best. Onions and dandelions may be cooked in the puddings for the first week, after which, they and clover, cress, lettuce, etc., may be chopped up for them.

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#### Useful Hints.

Some useful tips are given by *Farm Life*: Don't be induced to part with your best chickens. Take steps to prevent lice and mites from obtaining a stronghold. Move the coops with the hen and chickens every day to fresh ground. Try to keep your young stock growing every minute from the time it is hatched. Coloured rings put round the shanks of the chicks are a great help to identification. Separate the cockerels from the pullets among your chickens as soon as possible. They always do better when parted early. Don't be in a hurry to feed the chicks until they are about thirty-six hours old. Up to then warmth is the most important thing. In testing eggs if you notice that the air space is small and the rest of the egg is patchy, you may be sure that the embryo is dead and the egg rotten. On cold days the sitting hen will sometimes refuse to leave her nest. She should not be allowed to have her way, but should be taken off and encouraged to eat.



## MODERN SCIENCE AND POULTRY PROBLEMS.

By OSCAR SMART.

(Continued from page 334, April, 1914.)

## PATTERN FLUCTUATIONS.

The different kinds of pattern, such as spangling, barring, lacing, mottling, duckwing, pile, etc., are all carried in the germ-cells as genetic factors, and are not, as many seem to think, an intermediate type between two self-colours. I doubt, for instance, if one could ever breed a mottled variety by simply crossing black with white, although to some that *might* appear the only method. An exception should be made in the case of cuckoo marking, which is frequently bred from a white  $\times$  black cross, or from the reciprocal mating. Although, however, the pattern is carried as a simple genetic factor the *evenness*, and in the case of mottles, cuckoos, etc., the *distribution* of the pattern, is not thus represented. The fluctuation in pattern is very complicated and not yet thoroughly understood, but what appears certain, in simple language, is this: that although pattern is inherited in a definite and comprehensible manner, the fluctuation from the perfect or exhibition type is as yet greatly involved. Experiment will no doubt evolve the nature and cause of pattern fluctuation, but it is certain that experiment will not evolve a means of selection by which fluctuating types can be entirely eliminated.

## FECUNDITY FLUCTUATION.

Further knowledge on the inheritance of egg production has done much to silence those who, a few years ago, being deceived themselves, tried to deceive others into the belief that fecundity was not inherited to a large or appreciable extent. High egg-production is now known to be inherited by the progeny of high fecund parents; to-day only the prevailing mode of inheritance is in dispute. Before this series of papers is brought to a conclusion we shall have something to say on Dr. Raymond Pearl's interesting contribution to this important subject; but here we are concerned only with fluctuation.

Whether the father, mother, or both parents possess the power of transmitting a high fecund constitution to their daughters, it is now absolutely certain that the capacity to produce heavy records is represented in the germ-cells of the parents and is transmitted to the progeny as a *definite genetic factor*. On first appearance this statement may seem open to some objection on account of the fluctuation existing between the different daughters from a highly fecund pair.

But a careful examination of the facts will shew these fluctuations to be of an "acquired" rather than of a "germinal" nature. In other words the modifications may be associated with either pathological or environmental conditions having no relation to heredity.

The number of oocytes shew little or no correlation with production (1) because many of them are entirely rudimentary, lacking the power of development, (2) because pathological conditions influence their development, and (3) because production may be affected by housing, feeding, and general management.

The inheritance of a specific fecund factor (say the power of a 200-egg average production) is therefore, although factorially definite, subjected to fluctuation through a number of other causes. Taking a particular instance, for purpose of illustration, if with the 200-egg factor is also inherited a deficiency of red blood corpuscles, the developing power of the ovary may be greatly decreased, causing the variation in some cases, to be so pronounced that little or no correlation can be found between the fecund factor of either parent and the "average" production of the progeny.

## PRACTICAL HINTS.

In spite of these, and many other fluctuating characters which might have been given, it must not be thought that characteristics are not inherited *pure* within a pure line. So long as they are genetically represented in the gametes factorial purity is bound to exist. Fixity of type, in such lines, is ensured, genetically at any rate, by keeping the lines pure; it is destroyed by the indiscriminate crossing of foreign strains. Owing to the nature of the fluctuations, variants from the genetic representation are bound to occur. This fluctuation if it be associated with hereditary factors is considerably decreased by a certain measure of in-breeding: it is proportionately increased by continual out-matings. If, however, the fluctuation is of a kind to suggest it having originated in environmental effects, then other and more obvious measures should be adopted for its curtailment.

A careful study of (1) the nature of fluctuation, and (2) the characters most closely affected by fluctuation, will shew the inadvisability of paying heavy prices for degrees of perfection possessing only a fictitious value. By this we do not mean that one should not purchase from



a noted strain; rather we would urge that breeders paid *on the strain* and not on the bird, unless under exceptional circumstances. We will give two illustrations in order to shew the importance of this.

When purchasing stock to produce heavy layers select from a strain which is noted for *consistent* heavy production—do not begrudge the extra pound or so necessary to procure absolutely reliable blood. But when selecting birds *within* this high fecund strain do not waste money on useless abnormal records. If you have two pullets, do not pay an extra sum for the pullet that has produced thirty more eggs than her sister—the extra thirty eggs is probably a fluctuation—so that, in spite of a difference in performance, the *breeding value* of two *full-blooded* sisters is probably the same.

Two buff cockerels may be judged in a similar way. If they are two full-blooded brothers their breeding value is probably identical. If of a good strain an extra five pounds should not be paid, unless for exhibition, for the one with slightly the better colour; if of a poor strain neither are worth purchasing. Pay on strain; *not* on individual characteristics. These remarks, of course, apply to *slight* differences, and do not refer to birds shewing grave faults.

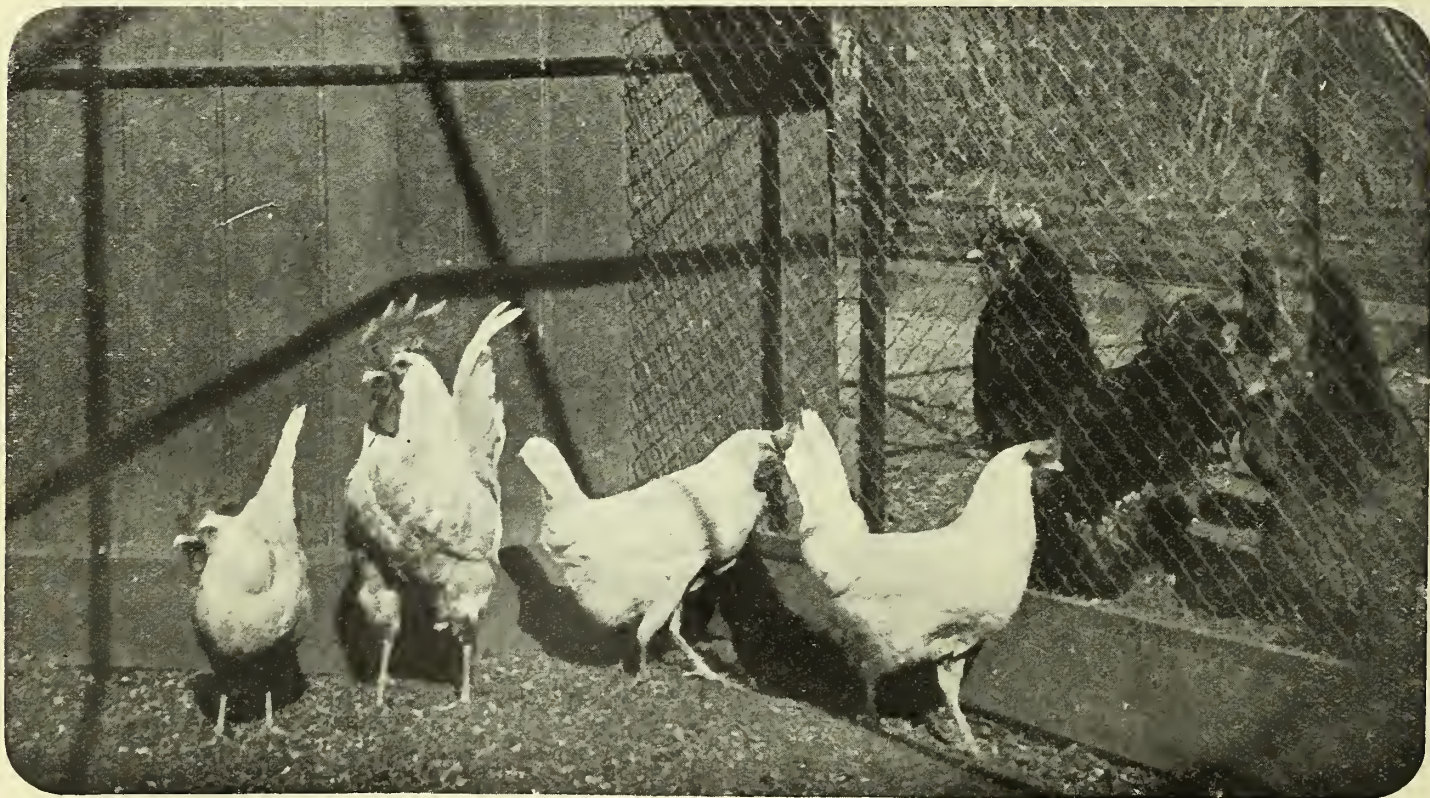
With respect to specific differences, we shall have something to say later; these are not comparable with fluctuating differences.

## CHICKEN FLATS.

(FROM A CORRESPONDENT IN THE "YORKSHIRE POST")



At intervals of about a year the writer was asked to inspect and report upon operations for the wholesale raising of chickens, in which considerable sums of money had been expended, without the return which had been anticipated. In each case the working manager of the business was the same man, whilst the principals who found the capital were different. He had submitted paper schemes to both parties, promising a big return, almost a competency, within a very short period. The forecast was fascinating in the extreme. Poultry-keeping, or any other pursuit, can always be proved successful and large profits realised—on paper. Anticipatory figures may be manipulated in accordance with the imagination of the calculator. In practice, however, something had gone wrong. Actualities did not correspond with anticipations. It was true that chickens were hatched in large numbers. Up to a given stage they appeared to thrive excellently, making rapid growth. They then came to the conclusion that the game was not worth the candle, and gave up the ghost. As was afterwards stated, the busiest time of the day was gathering up the dead birds in the morning. A small proportion managed to survive and attain killing age, and made good marketable specimens. These were mainly responsible for the loss



**Danish White Leghorns.**

Marvellous Egg Producers and Rapid Growers.

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incurred. It seemed that if a percentage, even though a small one, lived, the others ought to do so. Thus the investors were allured. How much the first syndicate sacrificed in hard coin was not revealed. The second capitalist expended and lost something like £5,000 in less than two years. These were costly experiences. Unfortunately they do not stand alone. Others are being tempted in like fashion at the present time, though probably upon a less extensive scale.

The locale of these operations is not of moment. Both were in England, and the time within recent years. The methods, however, were by no means novel. Attempts had been made in the same direction in Germany, in Belgium, and in America, as well as in this country—all excellent in theory, all unsuccessful in practice. It would be difficult to estimate how much money has been lost in this way, but the total must be a very substantial amount.

Whilst in detail there were variations, in principle all were the same. The chicks had to spend the earlier period of their natural lives in cages on shelves, massed in large numbers together, and then be finished off in outside runs, that is, if they lived long enough to enter upon occupation of the last named, where they had some chance. The mortality was so enormous during the first stage that those left had an opportunity to grow. A brief description of one of these will suffice for all.

In the second case referred to the place occupied was a large mansion, standing in fairly extensive grounds, obtained at a low rental because occupiers of houses of that class had gone elsewhere. There were excellent outbuildings, and the grounds were suitable for the purpose, if only the chickens had appreciated the fact, which they evidently did not. In the spacious downstairs rooms of the house were large incubators, which turned out chicks placed therein literally by the thousand. That fact was unmistakable, for the birds were in evidence. The failure could scarcely be attributed to either inferior machines or to bad management at this point, that is, the embryonic period of development. As upwards of a hundred thousand eggs were used in this way during one season, the test was extensive. What the percentage of hatching was is unknown, but it appeared to be fairly satisfactory.

Upstairs the rooms were occupied by stacks of cages or flats, usually in three tiers. For the younger chicks these were about 3ft. in length, in which the first week or ten days were spent, when the birds were transferred to larger cages, or two thrown into one, and so on, until they were seven or eight weeks old, if they lived that long, which the great majority did not. At one end of each compartment was a brooder box, within which was a wired guard, enclosing a gas jet to afford the necessary heat. A room about 30ft. by 18ft.

was capable of accommodating in this manner 2,000 to 3,000 young chickens, as the stacks were placed around the walls and down the centre. For the first few days everything went well. The chicks were active all the time, scratching among the litter for food. Anyone might easily be deceived by seeing them then. That, however, is in conformity with general experience. The testing time is when ten days have passed whenever forcing methods are adopted, whether upon a larger or a smaller scale.

What had evidently been ignored in both instances is that the most important element for every form of animal life is an abundance of fresh, pure air, without which it is impossible for the organs to perform their functions, for oxydisation of the blood to take place, and for the process of digestion to be accomplished. Even ordinary poultry breeders are prone to ignore what is here stated, even when operations are upon a moderate scale. Scores of thousands of chickens die annually as a consequence, which would otherwise be reared. Coops, brooders, and houses are often designed so that circulation of air is prevented, under the mistaken notion that warmth is the supreme factor. In the rooms referred to was an abundance of warmth, in fact too much. The fumes, however, from three score gas jets, the exhalations from hundreds of little lungs, and the almost rigid closing of all openings, made the atmosphere offensive in the extreme. Young chickens can withstand such influences for a brief period, as mentioned above. Then came reaction, failure of resistant power, and death. It was, indeed, survival of the fittest with a vengeance, and those that lived through these conditions deserved a better fate than the poulterer's counter.

As may be imagined, the result was attributed to every cause but the right one. Cages were changed, new gas burners tried, every class of food tested, but with no permanent alteration. The system was at fault, more so than is generally acknowledged. Chickens at the age named cannot be forced to this extent. That must be reserved for a later stage, not applied during the infant period of life. In proof may be mentioned an experiment carried out in America on an extensive scale, though not with equally disastrous results. There the birds were on shelves or flats in long, narrow houses, where the ventilation was on the whole very good. Mortality was not so great as in the two cases referred to, yet large enough to make profit impossible of realisation.

If these instances have the effect of showing that chicken flats have never proved commercially successful, and thus warning readers against the specious and misleading statements and advertisements which are being promulgated at the present time, the purpose in view will be attained. In the leading case already referred to, upwards of a hundred thousand eggs were incubated, and less



than three thousand chickens were marketed, so that the egg cost of each bird which matured was upwards of 4s. 6d., which was more than its selling value. Natural laws permit variations of method to some extent. There are, however, limitations which will not be ignored. Not many people are prepared to risk £5,000 in such ventures. Some may sink sums, the loss of which would be as serious in relation to their means.

## POULTRY COOKERY.

### Some Egg Dishes.

**A CREAM CHARLOTTE :** Butter the inside of a charlotte mould very liberally with cold, firm butter and ornament it tastefully with candied cherries cut in thin slices, and small strips or rings of angelica, then line it out entirely with finger pieces of stale sponge cake cut to fit, and packed quite closely together. Next, fill in the mould with a rich uncooked custard made with a pint of new milk, six or seven perfectly fresh eggs, salt and sugar to taste, and a pleasant flavouring of lemon juice, and steam steadily and gently until just nicely set. When done enough turn out carefully and serv   either hot or cold with a richly-coloured fruit syrup poured round about.

**A FRENCH CUSTARD PUDDING :** Take a pie-dish of the requisite size and place a layer of either fresh or preserved fruit at the bottom; over this sprinkle a little fine white sugar and pour over a custard made according to the directions given above only in this case leave out two of the egg-whites. Bake the pudding in a moderate oven until sufficiently set, then allow it to become quite cold; whip up the two egg-whites with a pinch of salt, a sweetening of fine white sugar and a small quantity of lemon juice until they form a very stiff firm froth, then pile this up in little rough rock-like pieces over the surface; sprinkle lightly with very finely chopped pistachios and serve with a dainty frill fixed round the pie-dish, the latter being placed on a fancy lace dish-paper.

**CHOCOLATE CUSTARD WITH CREAM :** Prepare in the usual way a good plain custard with rather more than a pint of new milk, four whole eggs and the yolks of two others, a saltspoonful of salt, two large tablespoonfuls of fine white sugar, and a pleasant flavouring of vanilla essence. When sufficiently thick and creamy—without, of course, ever being allowed to reach boiling point—stir in one ounce of French sheet of gelatine and four ounces of finely-grated pure chocolate which has been dissolved in a quarter-of-a-pint of hot water; then mix thoroughly, pour the preparation into a wet mould with an open centre, set it in a cold place—on ice if convenient—and leave it to set. When quite firm turn it out carefully on to a lace dish-paper and fill in the centre with a mound of delicately flavoured whipped cream; sprinkle the

surface of the latter with a mixture of chopped candied cherries and pistachios, and serve. **NOTE :** If the egg-whites which were reserved from the making of the custard are added to, and beaten with the cream the bulk of the latter will be considerably increased and it will also be rendered much firmer, which is a decided advantage.

**SMALL SWISS CUSTARDS :** Butter the insides of a dozen deep patty-tins with cold firm butter and into this press a sprinkling of finely chopped pistachios, and candied cherries cut in tiny slices, then fill the tins with a rich uncooked custard made with five large perfectly fresh eggs, half a pint of good cream, two tablespoonfuls of fine white sugar, half a teaspoonful of salt, and a few drops of some flavouring essence, and either poach or steam in the usual way until just nicely set. When done enough, turn out the custards, very carefully, on to cream croutons prepared as below, arrange tastefully on a pretty lace dish paper, and serve either hot or cold.

**TO PREPARE THE CROUTONS :** Cut some slices of stale spongecake half-an-inch thick, and stamp these out in rounds the same size as the tops of the patty-tins; then soak these in cream which has been pleasantly flavoured and sweetened, and afterwards drain them thoroughly, fry them carefully in clarified butter until delicately coloured, drain again, and use.

**PINEAPPLE CREAMS :** Tinned pineapple is the best for this purpose. Butter the insides of the small dariole moulds with cold butter and ornament them tastefully by placing at the bottom of each a thin round of the fruit, and from this, long narrow strips of the same reaching quite to the top of the mould, leaving a little spare between, which must be filled in with a light sprinkling of finely-chopped pistachios; press the decoration firmly into the butter and then set the moulds in a cool place until required. Chop, rather finely, as much of the pineapple as will fill an ordinary breakfast cup and stew it very gently for about ten minutes in a little of its own syrup, then turn it out to cool. Next, prepare a good custard—about a pint and a half—in the usual manner, and as soon as it is removed from the fire, stir in three quarters of an ounce of French sheet gelatine which has been softened in a few tablespoonfuls of hot water, and continue stirring until it is entirely dissolved, after which pour it out into a basin. When quite cool and just beginning to set, add the fruit and the syrup in which it was stewed, mix thoroughly, and pour the preparation into the moulds, taking care to do this very gently so as not to disturb the decorations. Set the moulds in a cool place until quite firm, then when required turn them out carefully on to a suitable dish, place on the flat top of each a thinly cut ring of angelica with a tiny bit of candied cherry in the centre, garnish round about with rough rock-like pieces of whipped cream, and serve.





**A Splendid Example of a Red Sussex Hen.**

*[Copyright*



## FURTHER NOTES ON SHOWING RHODE ISLAND REDS.

While there is some rivalry between the brindle comb and the rose comb varieties, still it is all good-natured rivalry, and large breeders that breed both varieties say there is but little difference outside the comb, still in some localities one breed is bred almost to the exclusion of the other, so we will let them fight it out. It is a curious fact the whole world over, the average purchaser when looking for a stock or eggs, will pay the highest prices to the breeder that has a strong show record, no matter how this record was accomplished. I do not want to belittle the value of prizes honestly won at large or local shows, as they are the real life of the fancy poultry business, and without the shows there would not be half the enthusiasm and sport to the average fancier. What the shows need most of all in the line of reform, more conscientious judging by judges free from the influences of the advertising value of the prizes given to certain breeders that patronize their papers, as I have seen some blatant examples on these lines. Every breeder should support his local show and do all in his power to make it a complete success, and there is no one person in each locality that does more for the good of the industry than the secretary of each show.

I hope the amateur will look farther into the case than the mere fact of the ribbons being awarded a certain breeder, because you may discover that the winners have been bought (which is no disgrace to any breeder) or possibly borrowed for the occasion (a very common offence), and the breeder has no right to sell you eggs or stock. Last, but not least, the much lauded winners may be expert samples of the fakir's art, and really birds of a quality unfit for breeding purposes. After handling practically thousands of reds, I find it a most amusing study to see how nature never makes a perfect specimen, and these same disqualified specimens with feathered legs and side sprig combs are just the birds that otherwise are nearest perfect, and it is these worthless specimens that the fakirs get in their fancy work, and when done at the proper time, few judges will throw them out, and the disqualified bird wins the A.P.A. cups in more than one case to my knowledge. When you attend your local show and feel dissatisfied with the awards, don't be afraid to ask the judge in a gentlemanly way to explain what does not seem right to you, and while you may not find all you would like to know, still it helps to hold down the judge to the fact that he cannot do just as he pleases without consequences. I have seen some of the old licensed judges act almost as if they really felt that they could not make a mistake, and their judgment should not ever be questioned. I wish the amateur breeder that believes the large exhibitors produce all their winners could see and know what I have seen done at the largest shows, and

they would realise that there was not so much real merit behind some show records, as it sounds.

Every judge should disqualify each and every exhibitor that shows birds that have been faked or tampered with, and he should be able to detect these improvements, or else have it openly understood that all have the same right to improve nature's handiwork. It is not a "square deal" for the amateur breeder to follow the printed show rules while the expert exhibitor knows they are only printed to be broken as he thinks fit, who goes ahead and remedies the shortcomings of nature and wins with his disqualified specimens over the truer blues that are not properly groomed.

I have known the first prize pen to be made up from other exhibits after coming to the show, and go back to their rightful owner after the show, and it is this kind of work that is killing the enthusiasm of the would be fancier, who, after working hard all year to produce an honest winner, sees his year's work turned down, without a fair chance against such competition. There will never be a judge that can satisfy all persons interested, and I have often heard good judges criticised by half informed critics that really did not know what went to make up a good Red except possibly size and stamina. Too many critics take into consideration only the most important points of a bird, while the judge should be a man capable of taking into consideration every line and feather (including those that may have been removed) that goes toward making our ideal which has never yet been realised. While judges differ as to their preference in shade of red, still they generally consider the depth of under colour throughout all sections a very important point, and the harmony of the surface colour in all sections, be it light or dark, is a strong winning point, while the health and brilliancy of plumage often decides a close decision.—de G.

### Recipe for Limewash.

In response to a reader's request for a simple limewash recipe suitable for use on the interior walls of a fowl-house, the following is given:—Take half a bushel of unslaked lime, slack with warm water, and cover it during the process to keep in the steam. Strain the liquid through a fine sieve or strainer, add a speck of salt previously well dissolved in warm water, 3lb. of ground rice boiled to a thin paste and stirred in boiling fat, ½lb. of powdered whiting, and 1lb. of glue which has been previously dissolved over a slow fire. Add five gallons of hot water to the mixture, stir well, and let it stand for a few days well covered. Strain carefully, and apply hot. There is nothing that can compare with it for outside or inside work, and it retains its brilliance for months. A limewash made in this way will stick better and last considerably longer than any other.—*Galloway Advertiser.*

### A Recurrent Myth.

Items with reference to the apparatus called the Sexaphone, which was fathered by the late Mr. W. T. Stead, keep reappearing in papers all over the world. There are people who apparently believe in it. Why do they not prove its reliability?



## THE UTILITY POULTRY CLUB'S TWELVE MONTHS' LAYING COMPETITION, 1912-1913.

F. W. RHODES,

*Lecturer on Aviculture at Harper Adams Agricultural College, Newport, Salop;  
and for the Staffordshire County Council.*

THIS competition, which commenced on October 15th, 1912, and ended on October 14th, 1913, included a laying test of one hundred pens of six pullets each, representing seventeen different breeds.

The entries consist of:—

Breed.	No. of Entries	Breed.	No. of Entries.
Wyandotte ...	35	Croad Langshan ...	3
Leghorn ...	21	Salmon Faverolles ...	2
Orpington ...	14	Black Minorca ...	1
Rhode Island Red...	7	Silver Campine ...	1
Buff Plymouth Rock	7	Barred Plymouth Rock	1
Ancona ...	4	Red Sussex ...	1
Black La Bresse ...	3		

*The Land.*—The land used for the test was covered with new turf consisting mainly of clover and rye-grass. It was considered doubtful whether turf so recently established would be able to withstand the heavy stocking with poultry, the probability being that it would be damaged beyond hope of recovery. At the end of the test, however, the grass runs were all well covered with turf, although the clover had completely disappeared. During the summer months a considerable amount of hay was mown. The hay removed would be of considerable value as fodder for other farm stock, but in the case of this test it was utilised mainly as nesting material and as litter for the scratching sheds.

An area of two hundred square yards was allotted to each pen. Allowing for necessary roadways and site for food and egg store-sheds, the land was stocked at the rate of 133 birds to the acre.

New turf has an advantage over old turf, since the latter, when it has been heavily stocked, becomes so saturated with poultry manure after the first few years, that it is no longer suitable for poultry. In addition, land which is heavily stocked with poultry ceases to produce clover, and this in itself is a great disadvantage, clover being especially valuable as a food for egg production. "Sweetness" of soil has an important bearing on the success of poultry-keeping, and the value of cultivation and cropping as a means of sweetening the soil has frequently been pointed out. For example, arable land can be laid down to temporary pasture for two years, and during this time used exclusively for poultry. It can then be ploughed up, cultivated and cropped for two years, and then again laid down to temporary pasture for poultry. This is a system which should prove profitable and advantageous in the case of the small holder devoting special attention to poultry-keeping. It

would certainly ensure sweet soil for the poultry, and poor arable lands treated in this manner, being enriched by the manurial residues from the poultry, could undoubtedly be made to produce larger crops and so be more profitable.

*The Pens.*—To return to the experiment, the pens were constructed with 2½ in. mesh wire-netting and were sub-divided diagonally. The object of this sub-division was to allow the birds to have the use of the two halves alternately. This arrangement was most beneficial to the runs as, owing to the heavy nature of the soil, they quickly puddled, and during wet weather the water was unable to drain away. The cost per run, including erection, was £2 2s. 7½d.

*The Houses.*—In designing a suitable house for the test many points had to be considered, the main object being to obtain a house having all the advantages of a well constructed laying-house at a reasonable cost. Nearly all the houses were built in pairs, and were constructed in sections which bolted together. They were of the open-fronted type, boarded up from the ground to a height of 2ft., and above this were adjustable glass slides with wooden shutters. The shutters were hinged to the roof, so that they could either be fixed to prevent rain beating into the houses, or closed up entirely, or placed on the roof in summer, thus leaving the whole of the wire-netted portion of the front of the house quite open. The houses were not provided with wooden floors, but were placed direct on the soil, on the same level as the run. This made it almost impossible to keep the floors dry during wet periods. This difficulty in keeping the houses dry necessitated extra expenditure on litter, and doubtless had some effect in reducing the egg yield during the winter months below what it might have been had the houses been set upon bricks and the centre filled in with rammed earth.

In each pen were three trap-nests, made in one set, and raised 14 in. from the ground level. This allowed the whole of the floor space to be utilised for scratching purposes. The perches were placed above the trap-nests.

*Method of Feeding.*—The method of feeding adopted at the beginning of the test was to give two meals per day. A soft, warm mash was fed early in the morning, and grain in the afternoon, the latter being buried in the litter. Under this treatment the birds did not take sufficient exercise, there being a tendency to inertia after the morning feed of warm mash. This method was changed to three feeds per day, the morning feed consisting of







would be increased by 12 cwt. 78 lb., reducing the amount of food required to produce 1 lb. of eggs to 4.8 lb.

*Average Cost and Value of 1 lb. of Eggs.*

Weight of dry food consumed to provide				
1 lb. eggs	...	...	...	= 5.4 lb.
Average value of 1 lb. of eggs	...	...	...	= 9.7 pence
Cost of food required to produce 1 lb. of				
eggs	...	...	...	= 5.3 "
Balance over cost of food	...	...	...	= 4.4 "

with the same foods as when laying. Many birds, though showing all the signs of broodiness, continued to lay whilst in this condition. It was thought that this fact might possibly indicate good laying qualities. With this idea in mind twenty-nine hens which showed this tendency were noted and watched. It was found that nineteen laid more than the average number of eggs, and ten laid less than the average. This in itself does not seem



Trap-nesting on the poultry farm at Macdonald College.

[Copyright.]

*Quantities of Graded Eggs.*

Total "A" grade laid	= 69,666	= 76.46 per cent.
" "B" "	= 21,342	= 23.42 "
" "C" "	= 107	= 0.12 "

Total "A," "B" and "C" grades laid } = 91,115 = 100. per cent.

**Broody Hens.**—Broody hens were removed from the nests as soon as the first signs of broodiness were apparent, and were put into spar-bottomed coops of the "Sussex fattening cage" type, which were raised about 4in. from the ground, allowing a free circulation of air all round the birds. In most cases they quickly got over the broody stage under this treatment. During broodiness they were fed

to indicate that this particular characteristic has any bearing upon egg production.

*Test of Broody Hens.*

19 birds throughout the test averaged	184.0 eggs.
10                   "                   "                   "	138.0   "
29                   "                   "                   "	168.1   "
Average for all birds in competition	151.9   "

**Number of Eggs Laid.**—The total number of eggs laid throughout the competition was 91,115—an average of 911.15 per pen, or 151.9 per bird. The greatest number of eggs laid by any one pen was 1,389—an average of 231.5 eggs per bird. The smallest number laid by one pen was 526—an average of 87.6 per bird.



*Number of Eggs Laid.*

Total eggs laid in 12 months by 600 pullets...	91,115
Average number of eggs laid in 12 months by 6 pullets (1 pen) ... ..	911.15
Greatest number of eggs laid in 12 months by 6 pullets (1 pen) ... ..	1,389
Average number of eggs laid in 12 months by each pullet in best pen ... ..	231.5
Average number of Eggs laid by the best ten pens (per pen)...	1,179

*Value of Eggs Laid.*—The total value of eggs laid was £431 11s. 6d., the valuation being made on the basis of the returns of the Board of Agriculture and Fisheries for the year 1911. Eggs weighing 2 oz. and over were valued at full market price; those under 2 oz. but over 1½ oz., at 15 per cent. less than market price, and all under 1½ oz. were considered valueless.

*Values of Eggs Laid.*

	Number of Pullets.	£	s.	d.
Total value of eggs laid by all pens	600	431	11	6
Value of eggs laid by best pen ...	6	7	0	3½
Average value of eggs laid per bird in best pen ... ..	1	1	3	4½
Average value of eggs laid by all pens... ..	6	4	6	4
Average value of eggs laid per bird by all pens ... ..	1	0	14	5
Value of eggs laid by lowest pen ...	6	2	7	3½
Average value of eggs laid per bird in lowest pen ... ..	1	0	7	10½

*Selecting the Best Layers.*—The most reliable method of selecting the best layers in a flock at the present time undoubtedly consists in the use of the trap-nest, but it has certain disadvantages which rather detract from its value. The great disadvantages are (1) the initial extra expenditure required in the purchase or manufacture of suitable trap-nests, and (2) the extra labour entailed in carrying out the actual work of trap-nesting and recording. These disadvantages are sufficient to deter the small poultry keeper from keeping accurate records. The larger poultry keeper is able to reduce the cost of labour considerably by running large numbers of birds together in specially constructed houses, but even then the outlay on trap-nests is not reduced.

Observations were made to ascertain the relationship between the time of commencement of laying and the total number of eggs produced in a year. From previous observations, it was conjectured that early laying and especially prolificacy during the early winter months, were probable signs of a good layer. All the birds tested were hatched in the same year, principally in March and April, the lighter breeds being hatched chiefly in April, and the heavier in March. The result of the observations made in connection with this competition showed that all those birds which laid ten eggs or more, or commenced to lay at all, during the first month of the test, gave a higher average than any others in the competition, and the average number of eggs for those which commenced to lay in the second month was higher than that for those commencing in the third month, which again was

higher than that for those which did not lay in the first three months.

*Average number of Eggs Laid by Birds Commencing to Lay at Different Times.*

Birds which laid 10 or more eggs in first month ... ..	187.5
Birds which laid at all in first month ...	167.7
Birds which did not lay for one month ...	161.4
Birds which did not lay for two months...	135.8
Birds which did not lay for three months	106.3
Average for whole of birds entered ...	151.9

From these figures it would seem that those birds which laid well during the first month might then have been picked out, and on the average would have proved exceptionally good layers, and that those which laid at all during the first month might have been chosen and expected to lay reasonably well, and so on according to the time of commencing to lay. The important months seem to be October, November and December, October being the most important. If such indications, on being substantiated by further tests, should prove a reliable guide in the selection of the best layers, considerable time, labour, and expense could be saved by discarding all those birds which, if hatched during March or April did not commence to lay before the end of the same year. In applying this hypothesis, however, it must be remembered that there will be many exceptions due to individual characters and health, and consequently a single bird which lays well during the autumn need not necessarily prove an excellent layer throughout the year, but the average yield of all such birds will be high. This does not take into consideration external effects such as methods of rearing, feeding, or housing, which may have a considerable influence upon egg production.

*Returns from an Acre of Grass.*—A comparison has been made of the gross returns obtainable from one acre of grass land when stocked entirely with poultry, and the same area used for milk production.

An experiment carried out on the College farm at the same time as the competition, shows that one acre of grass land can be made to produce 2,528 lb. of milk. The cows producing this had extra food valued at 8s.; the value of the milk produced was £6 1s. 2½d. From this must be deducted rent and rates (£2 per acre) and cost of extra feeding (an allowance of 10s. is made in the rent for value of winter grazing). This would leave a gross profit over food of £4 3s. 2½d. In the case of the poultry the balance, after deducting the cost of the food from the value of the eggs, was £193 15s. 1d. over the whole experiment, which gives a balance of £42 19s. per acre. Deducting the same rent and rates as in the milking experiment (£2 per acre), the gross profit from the poultry is £40 19s. per acre. To obtain the net profit per acre, depreciation of stock and plant should be taken into consideration, also interest on capital expended, and the cost of labour. Since the necessary amount required to be expended in plant



and labour, in the case of a laying competition is very much greater than would be necessary were the same number of birds kept on commercial lines, these figures have not been considered here, as the results would not be representative of actual practice. For example, the cost of plant alone in this test works out at nearly £1 per bird, whereas if the birds were kept on the semi-intensive system, all in one large house, the cost for plant per bird would not be more than 5s. It must be borne in mind that, although the gross return per acre in the case of the poultry is so much greater than for cattle, expenses in the former case would be correspondingly high; that is to say, the capital, labour, and depreciation of stock would be very much greater. Unfortunately there do not appear to be any available figures which might be utilised for the purpose of comparison. That the possibilities of egg production on commercial lines are great cannot be denied. The actual determination of these possibilities, and the factors which govern production, should prove an interesting and profitable field for further investigation.—*Journal of the Board of Agriculture.*

#### A WORLD'S POULTRY CONGRESS.

His Excellency, Mynheer Treub—Netherlands Minister of Agriculture, has given through Mr. Edward Brown, F.L.S., President of the International Association of Poultry Instructors and Investigators, on behalf of his Government, a cordial invitation for holding the First World's Poultry Congress at The Hague in 1916, which invitation has been unanimously accepted by the Council of that Association, at whose preliminary meetings held in London nearly two years ago a resolution was passed that such Congress should be held every three years. It was originally intended that the first should meet in 1915, but at the request of the Dutch Government it was postponed until the following year.

No more suitable country could have been chosen for a gathering of this nature than Holland, where of late years great developments have taken place in connection with the poultry industry, presenting special features not met with elsewhere. The central position of the Hague, and the facilities found there for holding international gatherings are so abundant, make the choice exceptionally favourable.

In due course official notification and invitations will be issued by the Netherlands Ministry through the regular channels. Meanwhile, it may be intimated that the First World's Poultry Congress will deal with every side of the industry—breeding, production, hygiene, education, research and trade. It is hoped that in many of the leading countries Committees will be formed to co-operate with an Executive Committee which is in process of formation.

#### POULTRY-FARMING AND SPORT IN SCOTLAND.

In our brilliant and up-to-date contemporary, *The Smallholder*—which, by the way, should be read every week by every smallholder in the country—some interesting particulars are given concerning the Russian method which seem to be fashionable among a certain class of so-called Scottish sportsmen.

"Judge" Lammie, of Darrel, sends me an account of a remarkable case recently heard in the Perth Sheriff Court.

The facts are these: A Mr. Currie entered into a five years' lease of a cottage and eight acres of land for the purpose of a poultry farm. His rent was £30 a year, and he spent £200 in stock, housing, fencing and appliances. Six months ago he had 400 pure bred birds.



At the Poltava Poultry Show, Russia. [Copyright]

In October last a shooting party entered his grounds, blazing away at pheasants, a large number of which fell into the pens, and on the coops and houses. The fowls were terrified and some were injured (according to the summing up by the Sheriff) by dashing themselves against the wires in the runs.

Mr. Currie wrote to the landlord's agent *not* asking for damages, but merely for an undertaking that such unreasonable conduct of the shooting party should not be repeated. The agent flatly refused to give this undertaking.

At a subsequent shoot Mr. Currie at great inconvenience removed 120 fowls to another part of his farm and more injury was done to those that were left.

He thereupon applied to the Sheriff for an injunction.

Seeing that Perth is a shire of Scotland and not of Russia or Mexico, all this is remarkable enough in all conscience, but the amazing part is this:

The defendants not only maintained that on a "sporting estate" they had a perfect right to go



and shoot where they liked, but they also brought a number of "experts" (gamekeepers!) to prove that so far from fowls objecting to be terrified they rather liked it. One particularly zealous servant of the pheasant shootists actually swore that he had "seen his puppies pull half the feathers out of some of his fowls without the least injury to the fowls or the egg yield!"

That anti-climax finished the case, and the Sheriff granted the injunction, saying that the right of the defendants to shoot freely on Mr. Currie's land could not be supported at law, and that unrestricted shooting on a poultry ground was inconsistent with the object for which the ground was let.

## TWO RAILWAY ITEMS.

### To Ireland via Fishguard.

If you are going to Ireland there are certain reasons why you should select the Fishguard route from London. The Great Western Railway Company can tell you all of them—we can tell you a few of them, but these are sufficient for the majority of travellers.

1.—Fishguard offers the shortest Anglo-Irish sea passage; a great boon to those who find sea-travel irksome.

2.—The Fishguard route is by far the shortest to Ireland from many parts of England and Wales.

3.—It is the quickest, in many ways:—London to Fishguard,  $5\frac{1}{2}$  hours; Fishguard to Rosslare,  $2\frac{3}{4}$  hours.



Another View of the Poultry Show [Copyright at Poltawa, Russia.]

4.—The G.W.R. Steamers— $22\frac{1}{2}$  knots—with powerful turbine engines, are constructed for speed and safety. The boats are manned by high-grade officers and efficient crews, and are equipped with wireless telegraphy by means of which passengers can dispatch telegrams.

5.—The Turbine engines conquer discomfort in sea travel—there is no unpleasant rolling.

6.—The trains on the Fishguard route represent

the maximum of modern travel comfort. Corridor expresses, with restaurant cars and courteous crews or staffs. Sleeping cars on night trains.

7.—The railway track to Fishguard—many parts new and relaid—is the finest railway track in the world. Part is laid four lines abreast.

8.—The train running is perfect—noted for absence of oscillation and discomfort.

9.—There are no delays on the journey—"via Fishguard" means rapid travel with punctual arrival.

10.—The G.W.R. locomotives on the Fishguard trains are among the finest running on the line—"Morning Star," "King Edward," etc.

### The Sunny Side of Ireland.

"What" says Thackeray, "sends picturesque tourists to Switzerland and the Rhine?—here is a country the magnificence of which no pen can give an idea." The vegetation is of such a varied and vigorous nature as I have seen nowhere else. When I have said that I have gone far towards awarding the prize for natural beauty.

The tender grace of wood and water is set in a framework of hills—now gentle, now stern, now dimpling with smiles; again frowning with impending storm; then mysterious with mist, then to gaze on you with clear and candid sunshine.

Such is my impression of the Sunny Side of Ireland.

The Fishguard route of the Great Western Railway took me as far as Rosslare Harbour—by train and boat—then a pleasant surprise met me as I entered a comfortable vestibule corridor carriage, in which I dined, read and smoked in the smooth-running express that bore me past Wexford and Waterford into the "Land of Milk and Honey"—and charming scenery.

My thanks are due to the Great Southern and Western Railway, not only on account of the comfort of the journey but also for the glorious scenery through which they took me. I would like to say something of Waterford, of Mallow, of Lismore, and of numerous other places of beauty and interest, but space will not permit.

I cannot tell you all I saw, or of the spirit of happiness with which I was imbued, as I journeyed by the G.S. and W. Railway, through the beauty spots of southern Ireland. My advice to all is take a ticket from Paddington and see for yourselves.—

A.M.B.

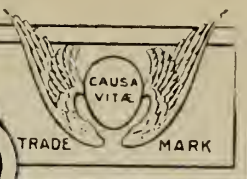
### Rats and Sitting Hens.

In our cuttings we find the following plan recommended for keeping rats, etc., from getting at the eggs and disturbing the sitting hen:—Get some shavings and soak them with tar, on which a few drops of pure creosote have been put, and place this under the turf, or slightly cover with earth, placing the nest on top. It also prevents insects from worrying the hens.





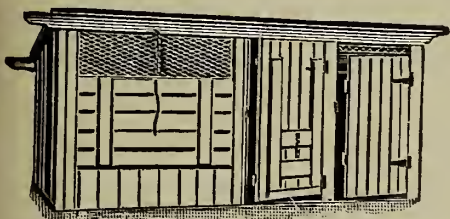
# TAMLIN'S



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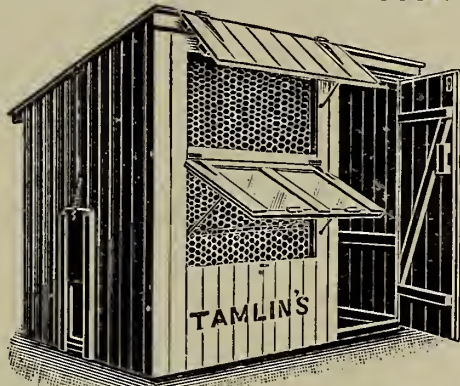
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## "JACK OF ALL WORK" POULTRY HOUSE & COOL BROODER.



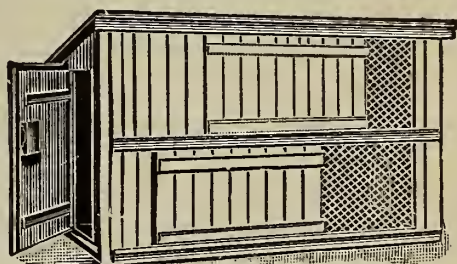
7ft. long, 3ft. wide, 3ft. 4in. high.  
A Cool Brooder, Cockerel Pen, Bantam House or Colony House. A useful appliance, as its name implies. Price complete, carriage paid, **£1 7s. 0d.**, or **£15 12s. 0d.** per dozen. Can be fitted with brooder lamp, making Semi-cool Brooder, **3/6** extra.

## "CRANFORD" POULTRY HOUSE.



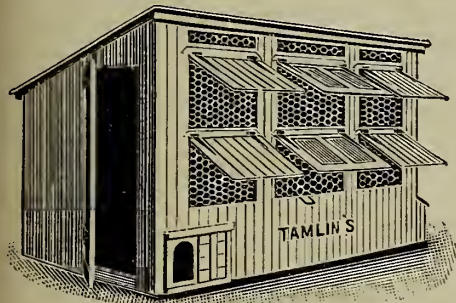
No. 1—6ft. long, 4ft. wide, 5ft. high, **34/-** carr.  
No. 2—8ft. long, 5ft. wide, 5ft. high, **50/-** paid

## "SUNBURY" POULTRY HOUSE.



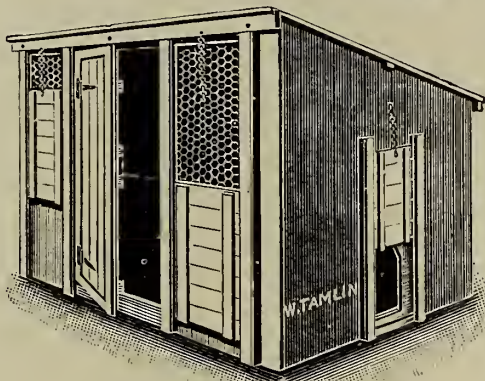
Size, 6ft. long, 4ft. wide, 3ft. 7in. high.  
Made in sections to bolt together. Fitted with Nest Boxes, Perches, Attendant Door with Lock & Key, Two Sliding Shutters to the Front, the top one covered with canvas. Price, complete, carr. paid, **22/6**. With movable floor **5/-** extra. The "Sunbury" House and Shelter combined, 12ft. long, price, carr. paid, **39/6**.

## "UCKFIELD" POULTRY HOUSE.



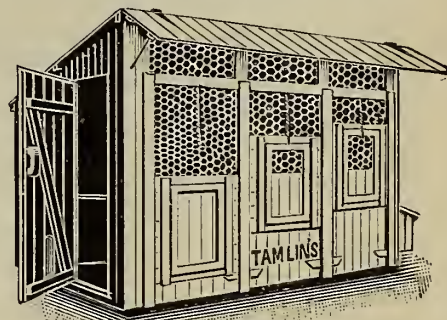
No. 1. 8ft. long, 5ft. wide, 5ft. high **£2 12/6**  
No. 2. 10ft. long, 6ft. wide, 6ft. high **£3 7/6**  
No. 3. 12ft. long, 7ft. wide, 6ft. high **£4 10/0**

## "FELTHAM" POULTRY HOUSE.



6ft. long, 4ft. wide, 4ft. high. Price, carr. paid to any goods station in England & Wales, **21/-**.

## "HARLINGTON"



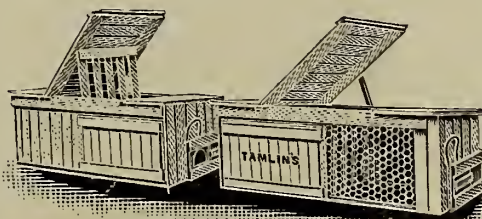
POULTRY HOUSE & SCRATCHING SHED.  
No 1. 6ft. long, 5ft. wide, 5ft. 6in. high, **£2 2/0**  
No. 2. 8ft. long, 6ft. wide, 5ft. 6in. high, **£3 0/0**

## "CHISWICK" POULTRY HOUSE.



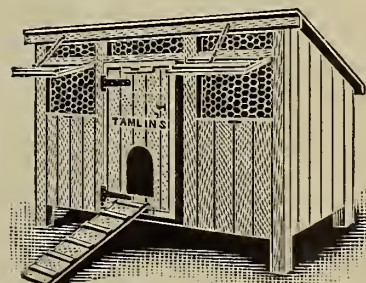
Fitted with dropping board. Size, 6ft. long, 4ft. wide, 3ft. 6in. high, carriage paid, **22/6**.

## "RICHMOND" HEN COOP AND RUN.



Size 4ft. long, 2ft. wide.  
Price **8/-** each; **46/-** for six; **90/-** per dozen.  
Ordinary Hen Coop with Shutter, **3/10**; half-dozen, **22/6**.

## "MOORMEAD" DUCK HOUSE.



Size, 6ft. long, 4ft. high, 3ft. 6in. wide.  
Price, **26/-**, carriage paid.

Write for our beautiful Art Catalogue of 144 pages, with over 250 illustrations of different appliances for Poultry-Breeders and Keepers. No matter what your wants might be, you will find it in this book: Poultry Houses, Chicken Rearing, Bone Cutters, Coops, Poultry Foods, Cramming Machines, Marking Rings, &c. It's mailed to you by return free and post free.

**W. TAMLIN, 40 St. Margaret's, Twickenham, LONDON.**

The Largest Incubator and Poultry Appliance Manufacturer in the World.



## POULTRY CLUB.

The monthly meeting of the Council was held on April 3rd, at the London Chamber of Commerce, Oxford Court, Cannon Street, London, E.C.

Mr. L. C. Verrey occupied the chair, and there were also present Miss S. Carey, Dr. S. E. Dunkin, G. Tyrwhitt-Drake, R. Fletcher Hearnshaw, S. C. Court, William Rice, P. H. Bayliss, Albert Smith, A. C. Powell and T. Threlford, Hon. Sec.

The minutes of the last meeting were read, amended, and confirmed.

*New Members—*

The following new members were elected :

*Recommended by the Kent Branch—*

Mr. Arthur Leonard Hedges, "Westfield," Farnborough.

*Recommended by the Nottinghamshire Branch—*

Mr. G. H. Black, Gunthorpe, Nottingham.

*Recommended by the Sussex Branch—*

Mr. Stanley G. Simmins, Broomham, Heathfield.

*Recommended by the Warwickshire, Worcestershire, and Staffordshire Branch—*

Mr. William Wilkinson, Coombe Abbey, Coventry.

Mr. Thomas Hughes, Brynteg Crynant, near Neath.

The Essex Agricultural Society Show, Hon. Sec. (Poultry section) W. D. Ward, Lower Islands, Waltham Abbey, was duly associated.

The following Shows announced to be held under Club Rules were granted Specials:—Sevenoaks and District Fanciers' Association, Burton Joyce, Calverton, Lowdham, Nottingham Bantam Show, and Collingham.

*Correspondence—*

Several letters were read and left in the hands of the Secretary to deal with.

*Panama Pacific International Exposition.*

Miss S. Carey drew attention to this Exhibition to be held at San Francisco. She had been asked to assist with the British section and was very anxious that it should be representative.

There would be keen rivalry between countries to make their section the best, because they knew the best display of poultry meant a good advertisement and would tend to influence future trade. She would like the Poultry Club to impress on its members the importance of a good consignment of birds being sent to the British section and that breeders should exhibit and obtain the credit for themselves rather than export birds for others to reap the benefit. A committee of Judges should be appointed to select the pens which should represent this country as only the best ought to go.

In reply to questions Miss Carey said it was the custom there to exhibit pens of five birds and she understood that the birds of each country would be judged by its own standard.

Miss Carey and Messrs. L. C. Verrey, P. H. Bayliss and T. Threlford were appointed to consider and report to the next Council.

The next meeting of the Council will be held on Friday, May 8th, at the London Chamber of Commerce, Oxford Court, Cannon Street, London, E.C. Fanciers wishing to become members may send their names to the Secretary of the County Branch or to the Hon. Secretary of the Club, on or before the 27th instant, and the secretaries of the county branches must send in all matter to appear on the Agenda to the Hon. Secretary not later than the 29th instant. T. Threlford, Hon. Sec., 2, St. Luke's Square, Victoria Docks, London, E.

*To the Editor, ILLUSTRATED POULTRY RECORD.*

Dear Sir,

The details given in your February number have had my full consideration, as well as the two articles in your March number. Before answering the first mentioned article I sent for a I.M.G. and during an incubation I examined it very carefully.

The apparatus explains accomplished facts, but no apparatus is needed to know that an accident has happened. We need an apparatus which shows us our mistakes, and at the same time offers a means to rectify these mistakes. I will not enter into all Mr. Piejus' details. To my mind they do not prove great experience. If a good brood is wanted, proceed as follows: Obtain well fertilised eggs, lay these in the drawer, and if it is doubtful whether the eggs are new-laid, put the drawer of eggs in the open air (garden) for 4-6 hours, or in a room by an open window, taking care that the eggs are not placed in a draught, or in the sun, and that the temperature of the air is not too low; not under 45°F. The damper the air the better.

Both thermometers are placed in the apparatus, and no other. It makes no difference whether they are placed over the eggs or away from them. The two quicksilver balls hang at a certain height. One thermometer dry, the other wrapped in linen gauze, the lower end of which is dipped in a bowl of water. Now put the egg drawer in the apparatus, and raise the temperature to about 103°F. After 24 hours observe the dry thermometer, open the drawer, and test the warmth of several of the eggs (also in the middle). Hold the blunt end of the egg to the corner of the eye. If an agreeable warmth is felt, then the right temperature has been obtained. If the eggs are too cold, raise the temperature. It is particularly to be observed that the thermometer does not show the exact warmth, it only gives indications. Only by measuring the warmth of the egg with the corner of the eye can the right warmth be obtained. When this has been obtained, then hatch out the whole brood at this warmth. My thermometer hangs in front of the window, and indicates 105°F. That does not matter at all. The turning and moving of the eggs must be done by everyone according to his own experience. Now look at the wet thermometer. If it indicates about 86°F, the correct amount of moisture has been obtained, and good results may be expected. If it stands lower than 84°F, cool the eggs in damp air from about 20 minutes to half-an-hour every day. If the wet thermometer stands at about 88°F. or higher, then it is too damp. Open the ventilators and cool only lightly.

If during the whole incubation period it has been too dry, then on the 18th day, take the egg drawer with the eggs out, put it on a table, and allow everything to remain so till the next morning. There is no cause for fear, no eggs will be spoilt. On the morning of the 19th day, put the eggs back into the apparatus, of course without the cloth, and do not open it again until the 22nd day. If during the whole incubation period the temperature has been too damp, then at the end of the incubation period the ventilators must be completely opened, and from the 19th day the little door must be a trifle open, so that the developing damp air can easily escape.

It would be a good thing if this experiment were accurately carried out, and the result published in this paper. When the apparatus is understood, i.e., when it is known at what temperature the incubation from the beginning must be carried on, it will be noticed as the first favourable sign, that there are no more dead embryos at the beginning of the incubation period, and also that blood-streaks have disappeared.

For the general good each one should make his experiences public. The solving of the problem of artificial hatching is worth the trouble.

Yours faithfully,

Crefeld, Germany.

P. SWEERS.



# READ WHAT CUSTOMERS THINK OF COOK'S OF ORPINGTON.

"One and All" are treated the same.

The following Testimonials are entirely unsolicited and are all recent ones.

**S. AMERICA**—J. C. M. Pinnell, of Buenos Ayres, S. America, writes:—"Four years ago you sent me out a lot of poultry, which have given the greatest satisfaction. I am enclosing cheque value £66 for 19 cocks, 10 hens, and 6 geese; details overleaf."

**U.S.A.**—G. W. Pike, Springfield, U.S.A., writes:—"All the White Orpingtons have arrived, and are exceedingly satisfactory to me in every way. Each and every one of the birds appears to be in excellent physical condition, and I could not have selected better birds to suit my requirements had I myself selected them."

**INDIA**—A. T. Mudaliar, Bangalore, India, writes:—"Thanks very much for sending me out such good and satisfactory birds. They arrived in the pink of condition."

**JAMAICA**—The Director of Agriculture, Jamaica, writes:—"I am sending through the Crown Agents an order for some more poultry. You have treated us so well on all previous shipments that I write to ask you to select the best you can."

**BELGIUM**—G. Glorieux, Brussels, writes:—"The birds have arrived and I am very pleased with your selection."

**CEYLON**—H. P. Aste, Colombo, in acknowledging the receipt of a large shipment says:—"The pens of Fowls and Bantams arrived in fine order, and I thank you for the good selection in carrying out my wishes."

**B. E. AFRICA**—Mr. Ray Ulygate of Mombassa, says:—"All the birds arrived in grand condition after a five weeks' journey. I am more than pleased with them and thank you for the prompt attention."

**JAPAN**—Captain Cameron, of Kobe, writes:—"I am simply delighted with all the birds you have so carefully selected for me. The tedious journey of six weeks has not affected them in the least."

**BARBADOES**—A large London Firm of Exporters write us on January 23rd:—"With reference to the fowls you sent out to Barbadoes for us, our friends write as follows:—"We are pleased to inform you that these arrived in excellent condition and have been much admired."

**U.S.A.**—Messrs. Stott & Son, New Hampshire, U.S.A., writing in February, state:—"The White Orpingtons are safely to hand in grand condition. As promised by your Mr. W. H. Cook when we met him at the Boston Show, he has carried out his promise to the letter and sent birds to our own choice and entire satisfaction."

**FRANCE**—G. H. Adams, Wimereux, P. de Calais, writes:—"The pens have arrived in perfect condition and I am much pleased with your selection."

**S. AFRICA**—Mr. B. Homersham, of Grays, Essex, writes:—"The pen of Barred Rocks arrived out in South Africa and have given every satisfaction, the Cock taking 1st prize and the pullet 2nd at Bloemfontein Show. I must once more thank you for the kind attention you gave to the order."

**U.S.A.**—E. Browning, Junior, Ohio, U.S.A., says:—"The pen of Campines have arrived in fine condition, C.O.D. I have sent the money on and hope you will be satisfied as I am."

**INDIA**—Mrs. Echlin, Lahore, India, a regular customer, writes:—"The birds, White Leghorns and Minorcas, you shipped to me, won 1st and 2nd prizes each at two of the leading shows in India the first time

they were shown, and are promising to do well next season with their progeny."

**ARGENTINE, S. AMERICA**—Mrs. M. B. de Archer, "Los Alamos," Argentine, writing on January 7th:—"This is to advise you that the Trio of White Orpingtons I purchased from you at the Dairy Show arrived at Buenos Ayres quite safely. My brother received them there, and sent them up to me here, about 300 miles. They arrived in splendid order, both hens laid the same day they arrived, and I already have had 19 eggs, so am very pleased with my purchase. Hope to soon do more business with you."

**DAY-OLD CHICKS**—W. Cox, Chatham, writes:—"Many thanks for chicks which I received quite safely.

I am very pleased with them, they are splendid birds and I am going to show them to all my chums."

[One of dozens received almost daily in our post bag].

**EGGS FOR SITTING**—Mrs. Hames, Edmonton, writes:—"I thought you would like to know I have hatched 12 strong chicks from the sitting of Orpingtons. They are as lively as sparrows and, being now 12 days old, look like growing into something good."

**EGG MACHINES from COOK'S AT ORPINGTON**—Mrs. Jeffery, of Grove Park, writing on 11th March, 1914, says:—"Last spring (May) I had 24 day-old chicks from you (White Leghorns and White Orpingtons). I reared 10 pullets. The first laid on Dec. 19th, since when they have laid 377 eggs. The cockerels did well, one pair of Orpingtons killed at Xmas weighed 14lbs. without any cramming. Please book me 2 more dozen for end of April."

**Mr. D. S. James, of Beckenham**, writing 6th March, 1914, says:—"Last October I purchased one cock and six pullets, (Faverolles) from you and I feel that probably the result of my investment may be of interest to you. They commenced laying November 5th, and during that month I had 20 eggs, December 75, January 114, and February 118. The production of last month's eggs is particularly good as there were three days short of January. The total amount to date received being £2 18s. 0½d., which almost covers the cost of birds, viz.: 63s. I think this is a good instance of the advisability from a commercial and economical point of view of paying a good price and getting a good article. Twelve of my eggs were recently put under a hen they all hatched and are doing well."

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## Export Trade in Poultry.

To the Editor, "ILLUSTRATED POULTRY RECORD."

Dear Sir,—A communication has reached me from South Africa, which is of so great importance that I venture to send it for publication in your columns. Many complaints have been made with regard to the unsatisfactory quality of birds exported to the Colonies. It is undoubtedly the fact that in a large number of cases full value is given for money paid, but that this is not always the case would appear to be certain.

However, the better way will be to quote the communication which is as follows:—

"I would like to say in answer to the statement that there is NO reason why English breeders should not receive our orders, that I and others affirm there is a GREAT reason, to wit, in ordering from the recognised American breeders we get what we ask for and pay for, and "strain" is guaranteed. This is what British firms must do if they want our orders.

"I am a member of the English White Leghorn Club, and can handle a lot of birds, of the right sort. I may say that I have recently imported a pen of Buff Orpingtons, and was prepared to pay £20 (twenty pounds) for four hens and a cockerel. This number of birds was sent to me, and cost, delivered £16 (sixteen pounds). I believe that the three hens that are alive are worth 10s. (ten shillings) each, and the cock, 21s. (one guinea), but the progeny from the pen are mostly 'feather-legs'?"

"In another pen of Buff (125 dollars, American), I received five birds about as nearly perfect as can be, but cannot say anything of progeny yet. Is it likely that I am going to recommend any of my members to import from England in this breed, under the above conditions much as I would like to."

I am not in a position to express any views as to whether this is justified or not, but simply state the facts as they have come to hand.

Anything which will facilitate the trade in breeding stock is important to the poultry industry as a whole.

Yours faithfully,

EDWARD BROWN.

39, Queen Anne's Chambers,  
Westminster, S.W.

April 9th, 1914.

## Mr. Tamlin's Exports.

Mr. W. Tamlin's exports for March, which make a total in all of 216 machines. Twelve 100 and six 60 incubators, also twelve 100 and six 60 foster mothers to A. Newcomb & Co., sole agents for New Zealand: two 100 foster mothers, twelve 60, fifteen 100 and three 200-egg incubators to M. Lebaron, per order of Andre Masson, sole agent for France; fifteen 100, five 200, and five 60 incubators, also two 60 foster mothers to Messrs. Treacher & Co., Ltd., Agents for Bombay, India; one 60 incubator to Mr. H. Dias, Ceylon; ten 60 and ten 100 incubators to Buenos Aires, Messrs. Gozo & Martinez, sole agents for Argentine; eighteen 60 and nine 100 incubators to Mr. J. F. Marshall, Johannesburg, sole agent for the Transvaal; fifteen 100 incubators and five 100 foster mothers to M. Andre Masson, sole agent for France; fourteen 60, eighteen 100, and four 200 incubators, eight 60, and four 100 Sunbeam foster mothers, one 60 and two 100 Nonpareil foster mothers to Messrs. Chandler, Ltd., Agents for Melbourne, Australia; one 60 incubator and one 60 foster mother to Mr. N. Ahmed, Constantinople.

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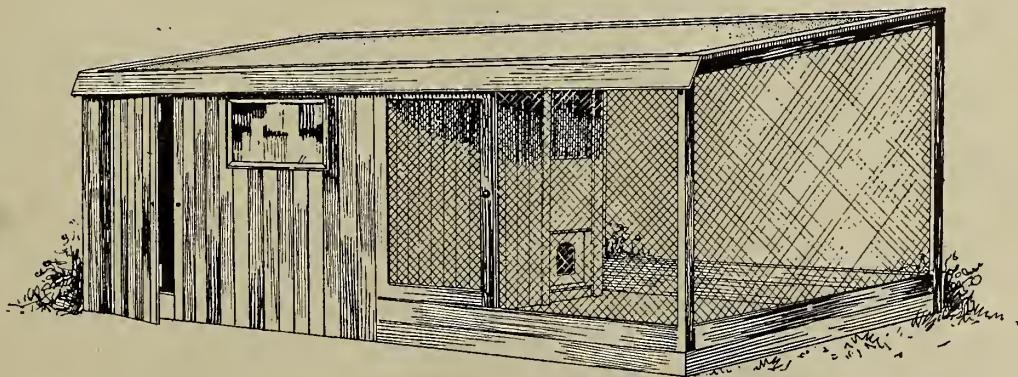
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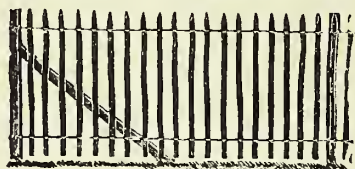
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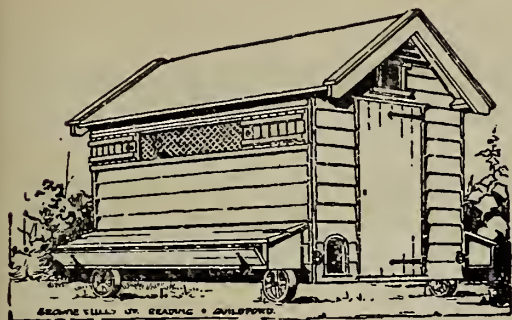
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**FEEDING.**—A1. Value of Elements.—A7. Food Consumption.—A3. Feeding-Pen for Chickens.—A2. Feeding-Trough.—A4. Bottle Fountain.—A5. Metal Fountain.—A6. Feeding-Block for Chicks.—A8. Feeding-Pen for Ducklings.

**ARTIFICIAL INCUBATION.**—A10. English Incubator - House Interior.—A9. English Incubator-House, Exterior.—A12. Ventilation pipe for Incubator-House.—A144. Cypher Incubator.—60. American Incubator-House, Interior.—61. American Incubator-House, Exterior.—113 and 115. Mammoth Incubator.

**NATURAL INCUBATION.**—A13. Basket Nest.—A14. Double Nest, with Run.—A15. Double nest, with Run Unattached.—A16. Sitting Hen Feeding-Cages.—A17. Hatching-Shed.—A18. Hatching-Box.

**TESTING EGGS.**—A24. Testing by Lamp.—A19. By Hand with Candle.—A21. Exterior Appearance of Egg.—A20. Structure of Egg.—A22. Embryo 24 Hours.—A194. Exit Chicken and Embryo, 3, 5, 7, 9, 11, 15, 19 days (8 sides).—A23 Circulation of Blood.

**NATURAL REARING.**—A25. French House.—A26. Double Coop.—A151. Cheap Coop, 4½d.—234. Coop-hen with Chickens.

**ARTIFICIAL REARING.**—A27. Brooder-House Exterior (Theale).—A150. Brooder-House Interior (Theale).—A159. Brooder - House Interior (Theale).—Hearson Brooder, Exterior.—Hearson Brooder, Interior.—A28. Portable Pipe Brooder (2).—A 29. Portable Pipe Brooder Runs.—A156. Brooder-House Interior (Pipes).—A162. French Brooder-House.—193. Small Brooder-House (American).—192. Brooder-House Runs.—A157. English Small Brooder-House.

**HOUSING** —A30. Ventilation Louvre Boards.—A31. Ventilation Gable.—A32. Lean-to House.—A152. Front New Scratching-Sheds.—A38. Scratching-Sheds, with Runs.—A41 American Scratching-Sheds, Front Elevation.—A39. American Scratching-Sheds, with Runs.—A34. American Scratching Sheds, Ground Plan.—A35. American Scratching-Sheds, Ground Plan, Portable Poultry-House.—A153. Portable-House with Run.—A40. Barrel Poultry-House.—A42. House with Self-raising Wheels (up).—A43. House with Self-raising Wheels (down).—A44. Fencing.—A45. Duck-House.—A46. Turkey-House.—A154. Danish Trap-Nest.—3. Portable Poultry-House (apex).—35. Continuation Poultry-House (American).—40. Colony Houses (American).—93. Diagram of Scratching-Shed.—94. Diagram of Scratching-Shed.—110. Colony Houses and Trap-Nests.—171. Open-Fronted Poultry House.—182. Diagram of Back-yard House and Run.—293. Range of Breeding-Pens (N. Zeal).—301 Birds Housed Amongst Bush Fruit.—317. German Scratching-Shed.—335 and 336. Portable Poultry-House.—297. Colony Houses (Piano Boxes).—322. Range of Laying Houses (American).—A158. Cockerel House.

**FATTENING.**—A47. Egyptian Fattening (2).—A48. Cramming by Pellets.—A49. Cramming by Mouth.—A163. Cramming by Funnel.—A64. Funnel for Fattening.—A65. Cramming by Machine.—A145. Interior Fattening-Shed.—A51. Outside Cages.—A52. Outside Cages.—A140. Interior Fattening-Shed.—A53. Killing.—A155. Plucking.—A147. Pens for Packing.—A149. Sussex Fowls, Dead (2 birds).—A57. French Dead Poultry.—A66. Sussex Fowls, Dead (2 birds).—A58. French Dead Poultry.—A59. Ducks' Livers.—A61. Sussex Collector and Cage.—A62. Shaping-Board.—A63. Birds in Shaping-Board.—117. Pair Buff Orpingtons, Dead.

**DUCKS.**—A113. Aylesbury, Pair.—A143 and A143A. Aylesbury, Single.—A114. Rouen, Pair.—A115. Huttegun, Pair. A116. Pekin, Pair.—A117. Cayuga, Pair.—A109. Blue Swedish, Pair.—A118. Indian Runner, Pair.—A164. Young Ducks and Drakes.—266. Aylesbury Duck Group.—A160. Duck-Fattening Pen.—A161. Duck-House Range.—A172. Classification of Ducks.—A173. Colour of Flesh and Skin.

**GEESE.**—A119. Toulouse, Pair.—A120. Embden.—A121. White Chinese.—A122. Brown Chinese.—A123. Pomeranian.—A124 African.—A155. Arsamas.—311. Toulouse Geese, Pair.—A174 Classification and Characteristics.

**TURKEYS.**—A125. Black.—A126. White.—A127. American Bronze.—A128. Cambridge Bronze.—A129. Norfolk.—A130 Norfolk Turkeys (Dead).—50. Turkey Fattening-Shed.—51. American Bronze Turkeys.—118. Group of Dead Turkeys.—209. Mammoth Bronze Turkeys (Groups).—210. Turkeys in Field.—A175. Characteristics.

**MARKETING EGGS.**—A142. Rose Egg - Box.—A146. Grading Egg-Board.—B140. Reynolds' Egg-Box.—A141. Robinson Egg-Box.—A134. Testing and Packing.

**MISCELLANEOUS.**—A131. Skeleton of Fowl.—A132. Ovaries A133. Oviduct.—A135. Feather-Eating Parasite.—A136. Scaly-Leg Parasite.—A137. Gape Worm.—A 138. Fowl Mite.—A139. Fowl Lice.—119. Macdonald Plant.—167. Cornell Exhibit.—212. Cornell Buildings.—213. Cornell Exhibit.—116. Model Farm (Foreign).—385. Caponising (Eight Slides).

## BREEDS

**CLASSIFICATION.**—A166. Laying or Non-sitting.—A167. Table.—A168. General Purpose.—A169. Breeds Laying Tinted-shelled Eggs.—A170. Colour of Flesh and Skin—White.—A171. Colour of Flesh—Yellow, Grey.—A68. Points of a Fowl.—A69. Lining a Fowl.—A83. Feather-marking.—A110. Gallus Bankiva.—A111. Combs of Fowls.—A112. Distribution of Domestic Fowl.

**LAYING OR NON-SITTING CLASS.**—A121. Anconas, Pair —A94. Andalusian Cock.—A106. Brakel Cock.—A90. Campines, Pair A12. White-crested Dutch.—A73. Black Hamburg, Pair.—A71. Silver Spangled Hamburg Cock.—A75. Houdans, Pair.—A92. White Leghorns, English Pair.—10. White Leghorns, Danish, Pair.—47 White Leghorns, American Hen.—47A. White Leghorns, American Cock.—189. White Leghorns, American Pullet.—A102. Buff Leghorns, Pair.—188. Brown Leghorns, American Cockerel.—307. Brown Leghorn, English Pullet.—308. Brown Leghorn, English Cockerel.—309. Brown Leghorn, English Hen.—262. Black Leghorn Cockerel.—264. Black Leg horn Pullet.—263. Blue Leghorn Group.—A74. Black Minorca, Pair.—A91. Redcaps, Pair.—A96. Scotch Greys, Pair.

**TABLE BREEDS.**—A104. La Bresse Cock.—A105. La Bresse Hen.—A85. Crevecoeur, Pair.—A80. White Dorking, Pair.—A81. Coloured Dorking, Pair.—A88. Silver Grey Dorking, Male.—A89. Silver Grey Dorking, Female.—146. Silver Grey Dorking, Cock.—150. Silver Grey Dorking, Pair.—Black Red Game.—A93. Old English Game.—A87. Indian (Cornish) Game, Pair.—A86. La Flèche, Pair.—A84. Malays.—A83. Red Sussex, Pair.—153. Red Sussex, Pair.—8. Speckled Sussex Hen.—231. Light Sussex Pen.

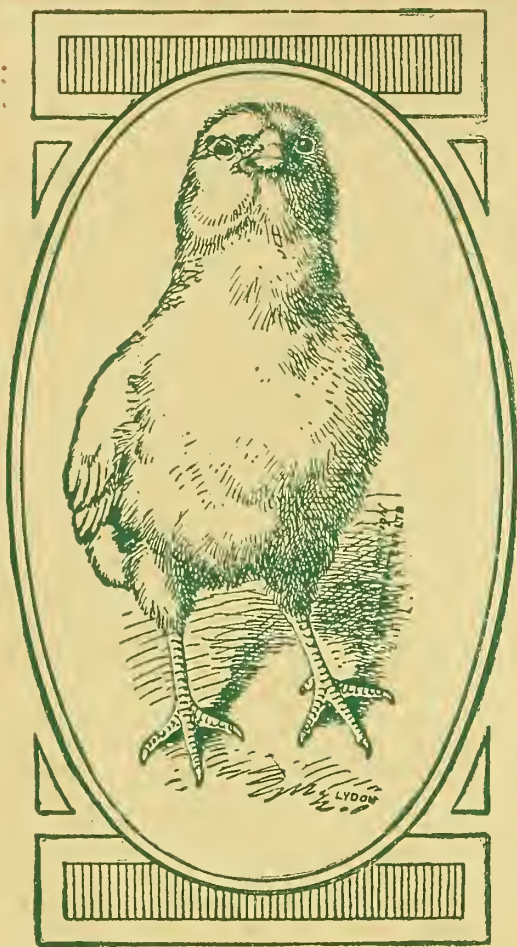
**GENERAL PURPOSE CLASS.**—183. Light Brahma American Group.—A98. Light Brahma Cock.—A101. Dark Brahma Cock.—A79. Faverolles, Pair.—A78. Black Langshans.—A99. Buff Orpingtons (Ludlow).—A100. Buff Orpingtons (Whippel).—A107. Buff Orpingtons (Ludlow).—71. White Orpingtons (Young).—Black Orpington Cocks.—67. Black Orpington Pair.—A77. Plymouth Rocks.—A184. Plymouth Rocks, American.—A103. Buff Plymouth Rock, Pair.—107. Buff Plymouth Rock Hen.—108. Buff Plymouth Rock, Male.—360. Buff Plymouth Rock Cockerel.—A108. White Plymouth Rock, Pair.—185. White Plymouth Rock, American.—A97. Rhode Island Red Pullet.—75. Single-Comb Rhode Island Red Cockerel.—76. Single - Comb Rhode Island Pullet.—361. Wyandotte Head, Typical.—A95. White Wyandottes, Pair.—186. White Wyandottes, American Pullet.—187. White Wyandottes, American Cockerel.—A72. Silver Wyandottes, Pair.—A75. Silver Pencilled Wyandottes, Pair.—A73. Silver Wyandottes.—A74. Golden Wyandottes, Pair.—95. Columbian Wyandottes (O. Hardec).—321. Columbian Wyandottes, American.—252 Nassau Cockerel.—255. Nassau Pullet.

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